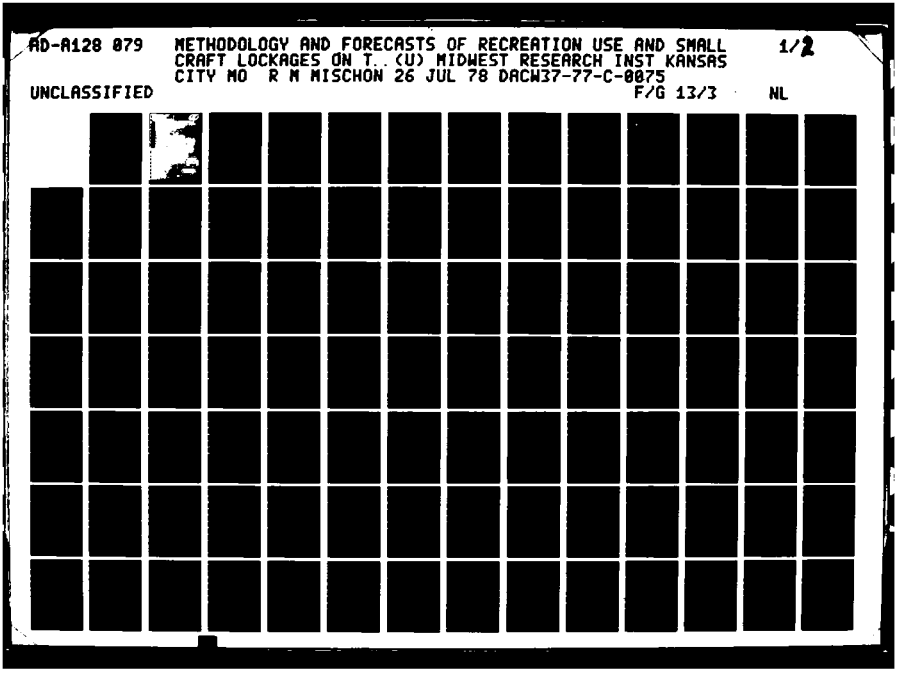
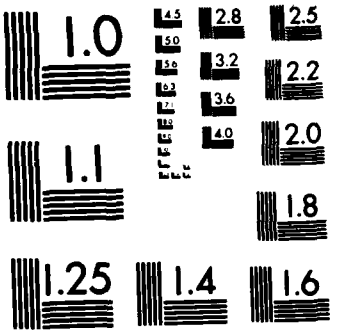
AD-A128 079 METHODOLOGY AND FORECASTS OF RECREATION USE AND SMALL CRAFT LOCKAGES ON T.. (U) MIDWEST RESEARCH INST KANSAS CITY MO R M MISCHON 26 JUL 78 DACW37-77-C-0075 1/2

UNCLASSIFIED F/G 13/3 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO. A128079
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle) METHODOLOGY AND FORECASTS OF RECREATION USE AND SMALL CRAFT LOCKAGES ON THE UPPER MISSISSIPPI RIVER. Volume 2; Appendix.	5. TYPE OF REPORT & PERIOD COVERED FINAL
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Raymond M. Mischon	8. CONTRACT OR GRANT NUMBER(s) DACW37-77-C-0075
9. PERFORMING ORGANIZATION NAME AND ADDRESS Midwest Research Institute 425 Volker Blvd. Kansas City, MO 64110	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Engineer District, St. Paul Corps of Engineers 1135 USPO & Custom House St. Paul, MN 55101	12. REPORT DATE July 1978
	13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	15. SECURITY CLASS. (of this report)
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Issued in two volumes.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

LOCKS (WATERWAYS)
BOATS (RECREATIONAL)
MISSISSIPPI RIVER

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report contains the findings, conclusions and recommendations for the Upper Mississippi Recreation Use and Small Craft Lockage Study. The study area extended from Minneapolis/St. Paul, Minnesota to just north of the confluence of the Missouri River with the Mississippi, north of St. Louis, Mo.

The overall objective of the recreation lockage study was to document present usage and develop a model for recreational use forecasting.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

METHODOLOGY AND FORECASTS OF RECREATION USE AND SMALL CRAFT LOCKAGES ON THE UPPER MISSISSIPPI RIVER

VOLUME II

FINAL REPORT
July 26, 1978

Contract No. DACW 37-77-C-0075
MRI Project No. 4387-D

For

U.S. Army, Corps of Engineers
St. Paul District
1135 U.S. Post Office and Custom House
St. Paul, Minnesota 55101

PREFACE

This report contains the findings, conclusions and recommendations for the Upper Mississippi Recreation Use and Small Craft Lockage study. Throughout the study, MRI worked closely with the St. Paul District. Some of the important study benchmarks included: the initial presentation in St. Paul recommending the recreation lockage survey, the subsequent survey which was conducted during the months of July and August, the public participation workshops held at three key cities along the Mississippi River, and finally a presentation of MRI's findings, conclusions and recommendations.

Volume II of this report contains the appendices which document the multiple regression analysis and gravity model utilized to forecast potential marina markets for the Mississippi River. Appendix E contains the documentation for the forecasting model itself. It is anticipated this model will continue to undergo revision as data coefficients and other important variables affecting lockage are studied.

The project director for this study was Mr. Raymond M. Mischon. The survey instrument was designed and supervised by Mrs. Greta O'Keefe and Ms. Cheryl Fellhauer. Because of the statistical techniques and computer analyses utilized in this study, several individuals were involved at various stages. Mr. Leroy Adams, Senior Computer Specialist, and Mr. Mike Sharp, Senior Statistician, performed the regression analysis and assisted in developing the forecasting model. Mr. Jim Miller, Consultant in Computer Science, supervised preparation of the survey data and provided all analyses of the data. Mr. Barry Sanders, also Consultant in Computer Science, provided assistance in the gravity analysis. The on-site recreation lockage survey was accomplished by four college students from the Kansas City area. These were Messrs. John Bingham, Paul James, Ray Mischon, Jr., and Graham Wheeler.

Special thanks go to Mr. Jim Holleran, Outdoor Recreation Planner, and Mr. Don Wadleigh, Water Resources Planner, both with the St. Paul District; also to Mr. Dave Arndorfer of Roy F. Weston, Inc., who supplied data from the Lake Superior Boating Survey.

Many other Corps staff from the St. Louis, Rock Island, and St. Paul districts assisted in collecting and providing interpretation of data. It has been a pleasure being a part of this benchmark study, and we are certain that the results will have long-lasting benefits in planning facilities and services for recreation craft on the Mississippi River.

MIDWEST RESEARCH INSTITUTE

Raymond M. Mischon

Raymond M. Mischon, Manager
Leisure/Recreation Programs

Approved:

A E Vandegrift

A. E. Vandegrift, Director
Economics and Management
Science Division

TABLE OF CONTENTS

APPENDIX A

SURVEY INSTRUMENT

MIDWEST RESEARCH INSTITUTE
425 Volker Boulevard
Kansas City, Missouri 64110

Questionnaire No. ____ (1–4)

Interviewer:_____ Date:_____ Time:_____ (5–12)

Day of Week: (1) Monday
(2) Tuesday
(3) Wednesday
(4) Thursday
(5) Friday
(6) Saturday
(7) Sunday (13)

Lock No:_____ Direction: (1) Up_____ (2)Down_____ (14–16)

Type of Craft:

(01) Runabout_____
(02) Cruiser, motorized_____
(03) Cruiser, large_____ (40 ft or over)
(04) Cruiser, sailing_____
(05) House/Pontoon boat_____
(06) Fishing boat_____
(07) Other (please specify) _____ (17)

Number of persons:_____ (19)

What is your place of residence?_____ (21)
_____
(City, State, Zipcode)

Where did you put your boat in the river?_____ River Mile: ____ (24)
_____ Road Miles: ____ (27)

Is your boat moored there? (1) Yes___ (2) No___ (30)

If not, did you transport your boat by trailer to the launch ramp? (1) Yes___ (2) No___ (31)

What is the destination of this boat trip?_____ River Mile: ____ (32)
_____

On this entire trip how many locks will you lock through?_____ (35)

Is this a (1) one-way trip?____(2) round trip?____ 37

Is this a (1) one-day trip?____(2) two-day trip?____
(3) three days or more?____ 38

Are you traveling in a group of boats? (1) Yes___ (2) No___ 39

If yes, how many boats are in your group?____ 40

Other than boating, which of the following recreational activities will you participate in on this trip:

Fishing ____ 42

Swimming ____ 43

Waterskiing ____ 44

Picnicking ____ 45

Camping:

On the dredge spoil islands ____ 46

Other areas ____ 47

Other (Please specify): 48

_____ 49

_____ 50

_____ 51

From May 1 through Labor Day, how many trips of this type will you take?

(1) 1-5____(2) 6-20____ (3) 21 and over____ 52

Do you have any comments concerning locks or lock usage?_____ 53

_____ 55

_____ 57

_____ 59

_____ 61

APPENDIX B

SIGNIFICANT CHI-SQUARE RELATIONSHIPS
(Recreation Lockage Survey)

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF * * * * * * * * * * * * * * * * * * *
VAR042 WEEKEND-WEEKDAY BY VAR044 TOTAL RIVER MILES
* PAGE 1 OF 1

		VAR044					
	COUNT / ROW PCT / COL PCT / TOT PCT	10 TO 50	51 TO 10 0	100 TO 1 50	151 TO 2 00	201 OR M ORE	ROW TOTAL
VAR042		1	2	3	4	5	
1 WEEKDAY		159	84	66	39	159	507
		31.4	16.6	13.0	7.7	31.4	34.6
		24.2	28.1	53.2	50.0	52.0	
		10.9	5.7	4.5	2.7	10.9	
2 WEEKEND		498	215	58	39	147	957
		52.0	22.5	6.1	4.1	15.4	65.4
		75.8	71.9	46.8	50.0	49.0	
		34.0	14.7	4.0	2.7	10.0	
COLUMN TOTAL		657	299	124	78	306	1464
		44.9	20.4	8.5	5.3	20.9	100.0

RAW CHI SQUARE = 104.88953 WITH 4 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMER'S V = .26767
CONTINGENCY COEFFICIENT = .25857
LAMBDA (ASYMMETRIC) = .03945 WITH VAR042 DEPENDENT. = 0 WITH VAR044 DEPENDENT.
LAMBDA (SYMMETRIC) = .01522
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .05476 WITH VAR042 DEPENDENT. = .02566 WITH VAR044 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .03495
KENDALL'S TAU B = -.22535. SIGNIFICANCE = .0000
KENDALL'S TAU C = -.25431. SIGNIFICANCE = .0000
GAMMA = -.37931
SOMERS'S D (ASYMMETRIC) = -.18082 WITH VAR042 DEPENDENT. = -.28084 WITH VAR044 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.22000
ETA SQRD = .26767 WITH VAR042 DEPENDENT.
= .24981 WITH VAR044 DEPENDENT.

CROSS TABULATIONS 08/28/77. PAGE 8

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF * * * * * * * * * * * * * * * * * * *
VAR043 TIME PERIOD OF DAY BY VAR044 TOTAL RIVER MILES
* PAGE 1 OF 1

VAR043	COUNT / ROW PCT / COL PCT / TOT PCT	VAR044 1 (0 TO 50)	2 (51 TO 100)	3 (101 TO 150)	4 (151 TO 200)	5 (201 OR M ORE)	ROW TOTAL
1		71	48	22	6	45	192
0600 TO 1200		37.0	25.0	11.5	3.1	23.4	13.1
		10.8	16.1	17.7	7.7	14.7	
		4.8	3.3	1.5	.4	3.1	
2		518	240	93	56	222	1127
1201 TO 1800		46.0	21.3	8.3	4.8	19.7	77.0
		78.8	80.3	75.0	69.2	72.5	
		35.4	16.4	6.4	3.7	15.2	
3		68	11	9	18	39	145
1801 TO 2400		46.9	7.6	6.2	12.4	26.9	9.9
		10.4	3.7	7.3	23.1	12.7	
		4.6	.8	.6	1.2	2.7	
COLUMN TOTAL		657 44.9	299 20.4	124 8.5	78 5.3	306 20.9	1464 100.0

RAW CHI SQUARE = 40.03622 WITH 8 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMERS V = .11693
CONTINGENCY COEFFICIENT = .16315
LAMBDA (ASYMMETRIC) = 0 WITH VAR043 DEPENDENT. = 0 WITH VAR044 DEPENDENT.
LAMBDA (SYMMETRIC) = 0
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .01963 WITH VAR043 DEPENDENT. = .00994 WITH VAR044 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .01319
KENDALLS TAU B = -.01445. SIGNIFICANCE = .2693
KENDALLS TAU C = -.01121. SIGNIFICANCE = .2693
GAMMA = -.02751
SOMERSS D (ASYMMETRIC) = -.01063 WITH VAR043 DEPENDENT. = -.01965 WITH VAR044 DEPENDENT.
SOMERSS D (SYMMETRIC) = -.01380
ETA SQRD = .13823 WITH VAR043 DEPENDENT.
= .07240 WITH VAR044 DEPENDENT.

```
FILE    DATA1    (CREATION DATE =  08/28/77.)

* * * * * * * * * * * * * * * * * * *   C R O S S T A B U L A T I O N   O F   * * * * * * * * * * * * * * * * * * *
   VAR042    WEEKEND-WEEKDAY                                          BY  VAR019    DAYS IN TRANSIT
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  PAGE  1 OF  1

                    VAR019
           COUNT  I
         ROW PCT  IONE DAY  TWO DAYS THREE OR   ROW
         COL PCT  I                   MORE      TOTAL
         TOT PCT  I      1  I      2  I     3  I
VAR042   ---------I---------I---------I--------I
              1   I     88  I     45  I    373 I   506
  WEEKDAY         I   17.4  I    8.9  I   73.7 I   34.6
                  I   20.6  I   16.9  I   48.6 I
                  I    6.0  I    3.1  I   25.5 I
                 -I---------I---------I--------I
              2   I    339  I    222  I    394 I   955
  WEEKEND         I   35.5  I   23.2  I   41.3 I   65.4
                  I   79.4  I   83.1  I   51.4 I
                  I   23.2  I   15.2  I   27.0 I
                 -I---------I---------I--------I
         COLUMN        427       267       767     1461
          TOTAL       29.2      18.3      52.5    100.0

RAW CHI SQUARE =    140.76165 WITH      2 DEGREES OF FREEDOM.  SIGNIFICANCE =        0
CRAMER"S V =    .31040
CONTINGENCY COEFFICIENT =     .29644
LAMBDA (ASYMMETRIC) =          0 WITH VAR042    DEPENDENT.          =          0 WITH VAR019   DEPENDENT.
LAMBDA (SYMMETRIC) =           0
UNCERTAINTY COEFFICIENT (ASYMMETRIC) =    .07732 WITH VAR042    DEPENDENT.         =   .04947 WITH VAR019   DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) =    .06033
KENDALL"S TAU B =  -.27301.    SIGNIFICANCE =    .0000
KENDALL"S TAU C =  -.28591.    SIGNIFICANCE =    .0000
GAMMA =  -.51466
SOMERS"S D (ASYMMETRIC) =  -.23606 WITH VAR042    DEPENDENT.          =  -.31573 WITH VAR019   DEPENDENT.
SOMERS"S D (SYMMETRIC) =  -.27015
ETA SQRD =    .31040 WITH VAR042    DEPENDENT.
         =    .27542 WITH VAR019    DEPENDENT.

NUMBER OF MISSING OBSERVATIONS =      3
```

CROSS TABULATIONS 08/28/77. PAGE 11

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF *
VAR043 TIME PERIOD OF DAY BY VAR019 DAYS IN TRANSIT
* PAGE 1 OF 1

VAR043	VAR019 ONE DAY	TWO DAYS	THREE OR MORE	ROW TOTAL
1	34	48	110	192
0600 TO 1200	17.7	25.0	57.3	13.1
	8.0	18.0	14.3	
	2.3	3.3	7.5	
2	355	203	566	1124
1201 TO 1800	31.6	18.1	50.4	76.9
	83.1	76.0	73.8	
	24.3	13.9	38.7	
3	38	16	91	145
1801 TO 2400	26.2	11.0	62.8	9.9
	8.9	6.0	11.9	
	2.6	1.1	6.2	
COLUMN TOTAL	427 29.2	267 18.3	767 52.5	1461 100.0

RAW CHI SQUARE = 24.97457 WITH 4 DEGREES OF FREEDOM. SIGNIFICANCE = .0001
CRAMER'S V = .09245
CONTINGENCY COEFFICIENT = .12964
LAMBDA (ASYMMETRIC) = 0 WITH VAR043 DEPENDENT. = 0 WITH VAR019 DEPENDENT.
LAMBDA (SYMMETRIC) = 0
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .01295 WITH VAR043 DEPENDENT. = .00896 WITH VAR019 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .01059
KENDALL'S TAU B = -.01304. SIGNIFICANCE = .2955
KENDALL'S TAU C = -.00939. SIGNIFICANCE = .2955
GAMMA = -.02759
SOMERS'S D (ASYMMETRIC) = -.01034 WITH VAR043 DEPENDENT. = -.01644 WITH VAR019 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.01270
ETA SQRD = .09187 WITH VAR043 DEPENDENT.
= .09443 WITH VAR019 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 1

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF *
VAR042 WEEKEND-WEEKDAY BY VAR045 TOTAL LOCKS PASSED
* PAGE 1 OF 1

		VAR045				
	COUNT / ROW PCT / COL PCT / TOT PCT	10 TO 5	6 TO 10	11 TO 15	16 OR MORE	ROW TOTAL
		1	2	3	4	
VAR042						
1		193	87	67	160	507
WEEKDAY		38.1	17.2	13.2	31.6	34.6
		24.7	32.8	55.4	54.1	
		13.2	5.9	4.6	10.9	
2		589	178	54	136	957
WEEKEND		61.5	18.6	5.6	14.2	65.4
		75.3	67.2	44.6	45.9	
		40.2	12.2	3.7	9.3	
COLUMN TOTAL		782	265	121	296	1464
		53.4	18.1	8.3	20.2	100.0

RAW CHI SQUARE = 106.90439 WITH 3 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMER'S V = .27023
CONTINGENCY COEFFICIENT = .26087
LAMBDA (ASYMMETRIC) = .07298 WITH VAR042 DEPENDENT. = 0 WITH VAR045 DEPENDENT.
LAMBDA (SYMMETRIC) = .03112
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .05547 WITH VAR042 DEPENDENT. = .03049 WITH VAR045 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .03935
KENDALL'S TAU B = -.23914. SIGNIFICANCE = .0000
KENDALL'S TAU C = -.25629. SIGNIFICANCE = .0000
GAMMA = -.41531
SOMERS'S D (ASYMMETRIC) = -.20206 WITH VAR042 DEPENDENT. = -.28303 WITH VAR045 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.23578
ETA SQRD = .27023 WITH VAR042 DEPENDENT.
= .26220 WITH VAR045 DEPENDENT.

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF *
VAR014 BOAT MOORED AT ENTRY BY VAR048 ROAD MILES TRAVELED
* PAGE 1 OF 1

VAR014	VAR048	1 10 TO 10	2 11 TO 15	3 26 TO 50	4 51 OR MORE	ROW TOTAL
1 YES	COUNT	480	78	55	137	750
	ROW PCT	64.0	10.4	7.3	18.3	53.4
	COL PCT	68.4	54.9	41.4	32.0	
	TOT PCT	34.2	5.6	3.9	9.8	
2 NO	COUNT	222	64	78	291	655
	ROW PCT	33.9	9.8	11.9	44.4	46.6
	COL PCT	31.6	45.1	58.6	68.0	
	TOT PCT	15.8	4.6	5.6	20.7	
COLUMN TOTAL		702	142	133	428	1405
		50.0	10.1	9.5	30.5	100.0

RAW CHI SQUARE = 149.85107 WITH 3 DEGREES OF FREEDOM. SIGNIFICANCE = 0
CRAMER"S V = .32658
CONTINGENCY COEFFICIENT = .31045
LAMBDA (ASYMMETRIC) = .27023 WITH VAR014 DEPENDENT. = .09815 WITH VAR048 DEPENDENT.
LAMBDA (SYMMETRIC) = .18115
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .07866 WITH VAR014 DEPENDENT. = .04670 WITH VAR048 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .05861
KENDALL"S TAU B = .30504. SIGNIFICANCE = .0000
KENDALL"S TAU C = .34389. SIGNIFICANCE = .0000
GAMMA = .50579
SOMERS"S D (ASYMMETRIC) = .26935 WITH VAR014 DEPENDENT. = .34547 WITH VAR048 DEPENDENT.
SOMERS"S D (SYMMETRIC) = .30270
ETA SQRD = .32658 WITH VAR014 DEPENDENT.
= .32613 WITH VAR048 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 59

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF *
VAR014 BOAT MOORED AT ENTRY BY VAR044 TOTAL RIVER MILES
* PAGE 1 OF 1

VAR014	COUNT / ROW PCT / COL PCT / TOT PCT	VAR044 1 (10 TO 50)	2 (51 TO 10 0)	3 (100 TO 1 50)	4 (151 TO 2 00)	5 (201 OR M ORE)	ROW TOTAL
1		322	134	53	43	198	750
YES	ROW PCT	42.9	17.9	7.1	5.7	26.4	53.4
	COL PCT	51.3	47.3	44.9	56.6	66.0	
	TOT PCT	22.9	9.5	3.8	3.1	14.1	
2		306	149	65	33	102	655
NO	ROW PCT	46.7	22.7	9.9	5.0	15.6	46.6
	COL PCT	48.7	52.7	55.1	43.4	34.0	
	TOT PCT	21.8	10.6	4.6	2.3	7.3	
COLUMN TOTAL		628 44.7	283 20.1	118 8.4	76 5.4	300 21.4	1405 100.0

RAW CHI SQUARE = 28.16410 WITH 4 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMER"S V = .1415R
CONTINGENCY COEFFICIENT = .14018
LAMBDA (ASYMMETRIC) = .04122 WITH VAR014 DEPENDENT. = 0 WITH VAR044 DEPENDENT.
LAMBDA (SYMMETRIC) = .01885
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .01472 WITH VAR014 DEPENDENT. = .0073R WITH VAR044 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .00983
KENDALL"S TAU B = -.07416. SIGNIFICANCE = .0006
KENDALL"S TAU C = -.09373. SIGNIFICANCE = .0006
GAMMA = -.13303
SOMERS"S D (ASYMMETRIC) = -.06656 WITH VAR014 DEPENDENT. = -.09416 WITH VAR044 DEPENDENT.
SOMERS"S D (SYMMETRIC) = -.07799
ETA SQRD = .1415R WITH VAR014 DEPENDENT.
= .10935 WITH VAR044 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 59

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF *
VAR014 BOAT MOORED AT ENTRY BY VAR019 DAYS IN TRANSIT
* PAGE 1 OF 1

VAR014	VAR019 ONE DAY (1)	TWO DAYS (2)	THREE OR MORE (3)	ROW TOTAL
YES (1)	148	123	476	747
	19.8	16.5	63.7	53.3
	36.7	49.6	63.4	
	10.6	8.8	34.0	
NO (2)	255	125	275	655
	38.9	19.1	42.0	46.7
	63.3	50.4	36.6	
	18.2	8.9	19.6	
COLUMN TOTAL	403	248	751	1402
	28.7	17.7	53.6	100.0

RAW CHI SQUARE = 76.51421 WITH 2 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMER'S V = .23361
CONTINGENCY COEFFICIENT = .22749
LAMBDA (ASYMMETRIC) = .16641 WITH VAR014 DEPENDENT. = 0 WITH VAR019 DEPENDENT.
LAMBDA (SYMMETRIC) = .08346
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .03984 WITH VAR014 DEPENDENT. = .02755 WITH VAR019 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .03257
KENDALL'S TAU B = -.22211. SIGNIFICANCE = .0000
KENDALL'S TAU C = -.24261. SIGNIFICANCE = .0000
GAMMA = -.39054
SOMERS'S D (ASYMMETRIC) = -.20246 WITH VAR014 DEPENDENT. = -.24366 WITH VAR019 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.22116
ETA SQRD = .23361 WITH VAR014 DEPENDENT.
= .23359 WITH VAR019 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 62

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF *
VAR014 BOAT MOORED AT ENTRY BY VAR045 TOTAL LOCKS PASSED
* PAGE 1 OF 1

VAR014	COUNT / ROW PCT / COL PCT / TOT PCT	VAR045 1 (0 TO 5)	2 (6 TO 10)	3 (11 TO 15)	4 (16 OR MO RE)	ROW TOTAL
1 YES		395	108	50	197	750
		52.7	14.4	6.7	26.3	53.4
		53.2	42.4	43.5	67.5	
		28.1	7.7	3.6	14.0	
2 NO		348	147	65	95	655
		53.1	22.4	9.9	14.5	46.6
		46.8	57.6	56.5	32.5	
		24.8	10.5	4.6	6.8	
COLUMN TOTAL		743	255	115	292	1405
		52.9	18.1	8.2	20.8	100.0

RAW CHI SQUARE = 40.28514 WITH 3 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMER'S V = .16933
CONTINGENCY COEFFICIENT = .16695
LAMBDA (ASYMMETRIC) = .09244 WITH VAR014 DEPENDENT. = 0 WITH VAR045 DEPENDENT.
LAMBDA (SYMMETRIC) = .04100
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .02106 WITH VAR014 DEPENDENT. = .01235 WITH VAR045 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .01557
KENDALL'S TAU B = -.05281. SIGNIFICANCE = .0172
KENDALL'S TAU C = -.05949. SIGNIFICANCE = .0172
GAMMA = -.09292
SOMERS'S D (ASYMMETRIC) = -.04666 WITH VAR014 DEPENDENT. = -.05976 WITH VAR045 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.05240
ETA SQRD = .16933 WITH VAR014 DEPENDENT.
= .08615 WITH VAR045 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 59

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF * * * * * * * * * * * * * * * * * * *
VAR014 BOAT MOORED AT ENTRY BY VAR032 NUMBER OF TRIPS
* PAGE 1 OF 1

	VAR032			
	COUNT / ROW PCT / COL PCT / TOT PCT	1 1-5 TRIPS	2 6-20 TRIPS	3 21 OR MORE	ROW TOTAL
VAR014					
	1	280	377	87	744
YES		37.6	50.7	11.7	53.3
		41.9	61.7	74.4	
		20.1	27.0	6.2	
	2	388	234	30	652
NO		59.5	35.9	4.6	46.7
		58.1	38.3	25.6	
		27.8	16.8	2.1	
	COLUMN TOTAL	668	611	117	1396
		47.9	43.8	8.4	100.0

RAW CHI SQUARE = 72.95220 WITH 2 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMER'S V = .22860
CONTINGENCY COEFFICIENT = .22285
LAMBDA (ASYMMETRIC) = .16564 WITH VAR014 DEPENDENT. = .13324 WITH VAR032 DEPENDENT.
LAMBDA (SYMMETRIC) = .14855
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .03048 WITH VAR014 DEPENDENT. = .02884 WITH VAR032 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .03297
KENDALL'S TAU B = -.22139. SIGNIFICANCE = .0000
KENDALL'S TAU C = -.23637. SIGNIFICANCE = .0000
GAMMA = -.40319
SOMERS'S D (ASYMMETRIC) = -.20646 WITH VAR014 DEPENDENT. = -.23740 WITH VAR032 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.22085
ETA SQRD = .22860 WITH VAR014 DEPENDENT.
= .22666 WITH VAR032 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 68

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF *
VAR014 BOAT MOORED AT ENTRY BY VAR020 IN A GROUP OF BOATS
* PAGE 1 OF 1

VAR014	COUNT / ROW PCT / COL PCT / TOT PCT	VAR020 YES (1)	VAR020 NO (2)	ROW TOTAL
YES	1	232	513	745
		31.1	68.9	53.3
		48.5	55.8	
		16.6	36.7	
NO	2	246	407	653
		37.7	62.3	46.7
		51.5	44.2	
		17.6	29.1	
COLUMN TOTAL		478	920	1398
		34.2	65.8	100.0

CORRECTED CHI SQUARE = 6.31022 WITH 1 DEGREE OF FREEDOM. SIGNIFICANCE = .0120
PHI = .06870
CONTINGENCY COEFFICIENT = .06853
LAMBDA (ASYMMETRIC) = .02144 WITH VAR014 DEPENDENT. = 0 WITH VAR020 DEPENDENT.
LAMBDA (SYMMETRIC) = .01238
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .00341 WITH VAR014 DEPENDENT. = .00367 WITH VAR020 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .00354
KENDALL'S TAU B = -.06870. SIGNIFICANCE = .0051
KENDALL'S TAU C = -.06503. SIGNIFICANCE = .0051
GAMMA = -.14402
SOMERS'S D (ASYMMETRIC) = -.07225 WITH VAR014 DEPENDENT. = -.06531 WITH VAR020 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.06861
ETA SQRD = .06870 WITH VAR014 DEPENDENT.
= .06870 WITH VAR020 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 66

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF *
VAR014 BOAT MOORED AT ENTRY BY VAR047 BOATS IN GROUP
* PAGE 1 OF 1

VAR014	VAR047 COUNT / ROW PCT / COL PCT / TOT PCT	2	3 TO 6	7 OR MOR	ROW TOTAL
YES	1	152	70	9	231
		65.8	30.3	3.9	48.6
		54.7	43.2	25.7	
		32.0	14.7	1.9	
NO	2	126	92	26	244
		51.6	37.7	10.7	51.4
		45.3	56.8	74.3	
		26.5	19.4	5.5	
COLUMN TOTAL		278 58.5	162 34.1	35 7.4	475 100.0

RAW CHI SQUARE = 13.33065 WITH 2 DEGREES OF FREEDOM. SIGNIFICANCE = .0013
CRAMER"S V = .16752
CONTINGENCY COEFFICIENT = .16522
LAMBDA (ASYMMETRIC) = .11255 WITH VAR014 DEPENDENT. = 0 WITH VAR047 DEPENDENT.
LAMBDA (SYMMETRIC) = .06075
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .02081 WITH VAR014 DEPENDENT. = .01652 WITH VAR047 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .01842
KENDALL"S TAU B = .15376. SIGNIFICANCE = .0003
KENDALL"S TAU C = .15910. SIGNIFICANCE = .0003
GAMMA = .29386
SOMERS"S D (ASYMMETRIC) = .14849 WITH VAR014 DEPENDENT. = .15922 WITH VAR047 DEPENDENT.
SOMERS"S D (SYMMETRIC) = .15366
ETA SQRD = .16752 WITH VAR014 DEPENDENT.
= .16591 WITH VAR047 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 989

FILE DATA1 (CREATION DATE = 08/28/77.)

* CROSSTABULATION OF * * * * * * * * * * * * * * * * * * *
VAR019 DAYS IN TRANSIT BY VAR020 IN A GROUP OF BOATS
* PAGE 1 OF 1

		VAR020		
	COUNT / ROW PCT / COL PCT / TOT PCT	YES 1	NO 2	ROW TOTAL
VAR019				
ONE DAY	1	66	337	403
		16.4	83.6	28.4
		13.4	36.4	
		4.7	23.7	
TWO DAYS	2	113	147	260
		43.5	56.5	18.3
		22.9	15.9	
		8.0	10.4	
THREE OR MORE	3	315	441	756
		41.7	58.3	53.3
		63.8	47.7	
		22.2	31.1	
COLUMN TOTAL		494	925	1419
		34.8	65.2	100.0

RAW CHI SQUARE = 84.57451 WITH 2 DEGREES OF FREEDOM. SIGNIFICANCE = .0000
CRAMER'S V = .24413
CONTINGENCY COEFFICIENT = .23717
LAMBDA (ASYMMETRIC) = 0 WITH VAR019 DEPENDENT. = 0 WITH VAR020 DEPENDENT.
LAMBDA (SYMMETRIC) = 0
UNCERTAINTY COEFFICIENT (ASYMMETRIC) = .03224 WITH VAR019 DEPENDENT. = .05008 WITH VAR020 DEPENDENT.
UNCERTAINTY COEFFICIENT (SYMMETRIC) = .03923
KENDALL'S TAU B = -.19364. SIGNIFICANCE = .0000
KENDALL'S TAU C = -.20243. SIGNIFICANCE = .0000
GAMMA = -.36499
SOMERS'S D (ASYMMETRIC) = -.22300 WITH VAR019 DEPENDENT. = -.16815 WITH VAR020 DEPENDENT.
SOMERS'S D (SYMMETRIC) = -.19173
ETA SQRD = .21472 WITH VAR019 DEPENDENT.
= .24413 WITH VAR020 DEPENDENT.

NUMBER OF MISSING OBSERVATIONS = 45

APPENDIX C

REGRESSION ANALYSIS

CORRELATION BETWEEN PLEASURE BOATS THROUGH THE LOCKS AND VARIOUS FACTORS

Multiple regression analyses were utilized to test the relationship between selected variables and the number of pleasure boats passing through the 28 locks on the Upper Mississippi River (1976). The variables (x_1 through x_{11}) are shown in Table C-1. These variables are explained in the body of the report. The SPSS program outputs from the regression analysis follows Table C-1. It may be noted that two separate flow factors were utilized. Flow I is in terms of lock flow averages; Flow II is in terms of regional flow averages. The model containing the regional flow averages accounted for slightly more variance than the model utilizing lock flow averages.

The variables are listed as follows:

Y = Pleasure boats through the locks

x_1 = Commercial marina slips (above and below the lock)

x_2 = Flow factors
- I. Lock flow averages
- II. Regional flow averages

x_3 = Commercial lockages

x_4 = Miles to next lock (above and below the lock)

x_5 = Recreation quality of pools (above and below the lock)

x_6 = Commercial marina slips (upstream)

x_7 = Commercial marina slips (downstream)

x_8 = Miles to next lock (upstream)

x_9 = Miles to next lock (downstream)

x_{10} = Recreation quality of pool (upstream)

x_{11} = Recreation quality of pool (downstream)

TABLE C-1

REGRESSION VARIABLES (PLEASURE BOATS THROUGH THE LOCKS VS. SELECTED VARIABLES)

Lock Number	Y	x_1	$x_{2(I)}$ [a]	$x_{2(II)}$ [a]	x_3	x_4	x_5 [b]	x_6	x_7	x_8	x_9	x_{10} [b]	x_{11} [b]
	Variable												
SPSS Variables	1	2	12(I)	12(II)	3	4	5	6	7	8	9	10	11
51	1,580	0	0.97	0.97	2,443	0.3	2.08	0	0	0	0.5	1.07	1.01
52	1,491	0	0.97	0.97	2,596	3.0	2.23	0	0	0.5	5.5	1.01	1.22
1	3,366	497	0.97	0.97	2,815	19.0	3.91	0	497	5.5	32.5	1.22	2.69
2	7,848	2,059	0.59	0.97	2,295	25.4	8.51	497	1,562	32.5	18.3	2.69	5.83
3	10,947	2,894	0.70	0.97	2,058	31.3	16.84	1,562	1,332	18.3	44.3	5.83	11.01
4	7,199	1,344	0.97	0.97	2,100	29.4	17.42	1,332	12	44.3	14.5	11.01	6.41
5	6,189	92	1.24	0.97	2,153	12.1	11.77	12	80	14.5	9.8	6.41	5.36
5A	8,114	627	0.97	0.97	2,200	12.0	11.58	80	547	9.8	14.3	5.36	6.22
6	6,494	593	0.97	0.97	2,218	13.0	13.98	547	46	14.3	11.8	6.22	7.77
7	9,939	955	1.06	0.97	2,628	17.5	17.25	46	909	11.8	23.3	7.77	9.48
8	5,694	1,125	0.97	0.97	2,235	27.3	20.93	909	216	23.3	31.3	9.48	11.45
9	6,913	1,001	0.97	0.97	2,688	32.1	22.13	216	785	31.3	33.0	11.45	10.69
10	10,024	1,007	1.26	0.97	2,448	32.5	18.42	785	222	33.0	32.0	10.69	7.74
11	7,078	1,299	0.94	1.05	2,478	29.1	13.40	222	1,077	32.0	26.3	7.74	5.66
12	4,929	1,278	1.26	1.05	2,926	30.3	16.24	1,077	201	26.3	34.3	5.66	10.58
13	6,840	828	0.81	1.05	2,511	31.7	17.05	201	627	34.3	29.3	10.58	6.47
14	9,713	945	0.98	1.05	3,693	19.8	9.81	627	318	29.3	10.3	6.47	3.34
15	6,782	783	1.05	1.05	4,032	18.0	10.88	318	465	10.3	25.8	3.34	7.55
16	2,355	555	1.05	1.05	3,787	23.0	13.57	465	90	25.8	20.3	7.55	6.02
17	2,339	186	1.05	1.05	3,505	23.4	14.01	90	96	20.3	26.5	6.02	7.99
18	2,663	397	1.05	1.05	3,781	36.4	13.73	96	301	26.5	46.3	7.99	5.75
19	1,425	399	1.05	1.05	2,659	33.6	9.50	301	98	46.3	21.0	5.75	3.75
20	1,170	348	1.05	1.05	4,051	19.6	10.56	98	250	21.0	18.3	3.75	6.81
21	1,706	366	1.05	1.05	4,271	21.0	12.50	250	116	18.3	23.8	6.81	5.69
22	1,453	217	1.05	1.05	4,169	25.8	11.54	116	101	23.8	27.8	5.69	5.86
24	1,682	244	1.05	1.05	4,270	29.9	12.14	101	143	27.8	32.0	5.86	6.29
25	2,638	2,299	1.05	1.05	4,317	35.3	15.63	143	2,156	32.0	38.5	6.29	9.34
26	632	2,156	1.05	1.05	13,726	38.5	18.67 [c]	2,156	0	38.5	18.0	9.34	9.34 [d]

a/ Recreation lockage survey data (origin explained in the body of the report).
b/ Development of the quality rating explained in the report.
c/ Quality of Pool 26 doubled.
d/ Downstream quality same as Pool 26.

CORRELATION BETWEEN PLEASURE BOATS THROUGH THE LOCKS AND VARIOUS FACTORS

1. Flow I Lock Flow Averages

2. Flow II - Regional Flow Averages

FLOW I

LOCK FLOW AVERAGES

UNITED COMPUTING SYSTEMS INC.
S P S S - - STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

VERSION 6.5 - - SEPT. 1, 1976

```
RUN NAME        LOCK REGRESSION
FILE NAME       LOCK123
VARIABLE LIST   VAR01 TO VAR12
INPUT MEDIUM    CARD
N OF CASES      28
INPUT FORMAT    FIXED(5X,3(F5.0),F5.1,F5.2,2(F5.0),2(F5.1),3(F5.2))
```

ACCORDING TO YOUR INPUT FORMAT, VARIABLES ARE TO BE READ AS FOLLOWS

VARIABLE	FORMAT	RECORD	COLUMNS
VAR01	F 5. 0	1	6- 10
VAR02	F 5. 0	1	11- 15
VAR03	F 5. 0	1	16- 20
VAR04	F 5. 1	1	21- 25
VAR05	F 5. 2	1	26- 30
VAR06	F 5. 0	1	31- 35
VAR07	F 5. 0	1	36- 40
VAR08	F 5. 1	1	41- 45
VAR09	F 5. 1	1	46- 50
VAR10	F 5. 2	1	51- 55
VAR11	F 5. 2	1	56- 60
VAR12	F 5. 2	1	61- 65

THE INPUT FORMAT PROVIDES FOR 12 VARIABLES. 12 WILL BE READ
IT PROVIDES FOR 1 RECORDS (*CARDS*) PER CASE. A MAXIMUM OF 65 *COLUMNS* ARE USED ON A RECORD.

```
VAR LABELS      VAR01,BOATS/VAR02,SLIP-B/VAR03,COMML/VAR04,MILES-B/
                VAR05,QUAL/VAR06,SLIPUP/VAR07,SLIPDWN/VAR08,MILESUP/
                VAR09,MILESDWN/VAR10,QUALUP/VAR11,QUALDWN/VAR12,FLOWI
REGRESSION      VARIABLES=VAR01 TO VAR12/
                REGRESSION=VAR01 WITH VAR02 TO VAR12(1) RESID = 0
OPTIONS         2,13
STATISTICS      1,2
READ INPUT DATA
```

054200 CM NEEDED FOR REGRESSION

LOCK REGRESSION 05/16/78. PAGE 3

FILE LOCK123 (CREATION DATE = 05/16/78.)

* M U L T I P L E R E G R E S S I O N *

DEPENDENT VARIABLE.. VAR01 BOATS

MEAN RESPONSE 4471.53571 STD. DEV. 3227.61473

VARIABLE(S) ENTERED ON STEP NUMBER 1.. VAR03 COMML

MULTIPLE R	.44076	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.19427	REGRESSION	1.	54643616.54775	54643616.54775	6.26899	.019
ADJUSTED R SQUARE	.16328	RESIDUAL	26.	226628798.41654	8716492.24679		
STD DEVIATION	2952.37061	COEFF OF VARIABILITY	59.4 PCT				

---------- VARIABLES IN THE EQUATION ----------

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR03	-.65445920	.26138685	6.2689916 .019	-.4407640 -.44689
(CONSTANT)	7193.2611	1048.1798	47.095571 .000	

---------- VARIABLES NOT IN THE EQUATION ----------

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR02	.62066	.94365	15.664597 .001
VAR04	.21570	.88575	1.2199333 .280
VAR05	.49938	.97222	8.3059441 .008
VAR06	.54909	.76335	10.790864 .003
VAR07	.35484	.97447	3.6012648 .069
VAR08	.17939	.94004	.83124193 .371
VAR09	.10985	.99999	.30538227 .585
VAR10	.42875	.98118	5.6308176 .026
VAR11	.45383	.97471	6.4844490 .017
VAR12	-.21249	.97281	1.1822254 .287

LOCK REGRESSION 05/16/78. PAGE 4

FILE LOCK123 (CREATION DATE = 05/16/78.)

* M U L T I P L E R E G R E S S I O N *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 2.. VAR02 SLIP-B

MULTIPLE R	.71039	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.50465	REGRESSION	2.	141944342.96937	70972171.48469	12.73472	.000
ADJUSTED R SQUARE	.46502	RESIDUAL	25.	139328071.99492	5573122.87980		
STD DEVIATION	2360.74625	COEFF OF VARIABILITY	47.5 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR03	-.85660793	.21515782	15.850754 .001	-.5769068 -.58492
VAR02	2.5127332	.63487285	15.664597 .001	.5735091 .44217
(CONSTANT)	5681.2229	921.09816	38.042744 .000	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR04	-.15410	.65131	.58377759 .452
VAR05	.30595	.76491	2.4785042 .129
VAR06	.22505	.41565	1.2803376 .269
VAR07	-.22495	.41560	1.2791323 .269
VAR08	-.07976	.80276	.15363932 .699
VAR09	-.19582	.83729	.95702667 .338
VAR10	.36011	.91967	3.5759575 .071
VAR11	.15223	.65392	.56934492 .458
VAR12	.12841	.74465	.40234435 .532

LOCK REGRESSION 05/16/78. PAGE 5

FILE LOCK123 (CREATION DATE = 05/16/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 3.. VAR10 QUALUP

MULTIPLE R	.75425	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.56889	REGRESSION	3.	160011939.21473	53337313.07158	10.55658	.000
ADJUSTED R SQUARE	.51500	RESIDUAL	24.	121260475.74956	5052519.82290		
STD DEVIATION	2247.78109	COEFF OF VARIABILITY	45.2 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR03	-.88666576	.20547792	18.620424 .000	-.5971501 -.60545
VAR02	2.2171218	.62437906	12.609053 .002	.5060384 .39015
VAR10	294.66494	155.82326	3.5759575 .071	.2642835 .37901
(CONSTANT)	4157.6024	1190.9418	12.187226 .002	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR04	-.50924	.40601	8.0527928 .009
VAR05	-.04594	.14369	.48644857E-01 .827
VAR06	.13370	.37976	.41864160 .524
VAR07	-.13359	.37971	.41790445 .524
VAR08	-.41773	.49009	4.8619626 .038
VAR09	-.32554	.77689	2.7263967 .112
VAR11	-.04548	.47495	.47674981E-01 .829
VAR12	.01456	.66799	.48798285E-02 .945

LOCK REGRESSION 05/16/78. PAGE 6

FILE LOCK123 (CREATION DATE = 05/16/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 4.. VAR04 MILES-B

MULTIPLE R	.82504	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F SIGNIFICANCE
R SQUARE	.68069	REGRESSION	4.	191457918.81518	47864479.70380	12.25730 .000
ADJUSTED R SQUARE	.62515	RESIDUAL	23.	89814496.14910	3904978.09344	
STD DEVIATION	1976.10174	COEFF OF VARIABILITY	39.7 PCT			

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR03	-.74631834	.18729074	15.878724 .001	-.5026292 -.50961
VAR02	3.0599466	.62411353	24.038120 .000	.6984057 .53847
VAR10	596.82402	173.50459	11.832340 .002	.5352884 .76767
VAR04	-174.62522	61.536629	8.0527928 .009	-.5247457 -.84087
(CONSTANT)	5192.8104	1108.6378	21.932682 .000	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR05	-.02897	.14345	.18481848E-01 .893
VAR06	.03582	.36407	.28261825E-01 .868
VAR07	-.03580	.36405	.28224854E-01 .868
VAR08	-.12224	.27255	.33374179 .569
VAR09	.09812	.34092	.21385857 .648
VAR11	-.02814	.47412	.17440451E-01 .896
VAR12	.05649	.66503	.70429399E-01 .793

LOCK REGRESSION 05/16/78. PAGE 7

FILE LOCK123 (CREATION DATE = 05/16/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 5.. VAR08 MILESUP

MULTIPLE R	.82792	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F SIGNIFICANCE
R SQUARE	.68546	REGRESSION	5.	192800051.77527	38560010.35505	9.58853 .000
ADJUSTED R SQUARE	.61397	RESIDUAL	22.	88472363.18902	4021471.05405	
STD DEVIATION	2005.36058	COEFF OF VARIABILITY	40.3 PCT			

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION			
VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY	VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR03	-.75067593	.19021345	15.574802 .001	-.5055639 -.51259	VAR05	-.11471	.10095	.28002393 .602
VAR02	3.0391965	.63437202	22.952476 .000	.6936697 .53482	VAR06	.05795	.35347	.70757582E-01 .793
VAR10	627.07457	183.69493	11.653169 .002	.5624200 .80658	VAR07	-.05792	.35346	.70686610E-01 .793
VAR04	-142.39428	83.740125	2.8914647 .103	-.4278923 -.68567	VAR09	-.12319	.01115	.32358202 .575
VAR08	-3.5490210	6.1433219	.33374179 .569	-.1323164 -.16370	VAR11	-.11374	.33362	.27522352 .605
(CONSTANT)	5073.7454	1143.5261	19.686348 .000		VAR12	.03816	.64883	.30631498E-01 .863

LOCK REGRESSION 05/16/78. PAGE 8

FILE LOCK123 (CREATION DATE = 05/16/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 6.. VAR09 MILESDWN

MULTIPLE R	.83080	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.69023	REGRESSION	6.	194142606.03428	32357101.00571	7.79870	.000
ADJUSTED R SQUARE	.60172	RESIDUAL	21.	87129808.93001	4149038.52048		
STD DEVIATION	2036.91888	COEFF OF VARIABILITY	41.0 PCT				

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION			
VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY	VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR03	-1.0737390	.59989484	3.2036657 .088	-.7231398 -.73319	VAR05	-.09749	.09851	.19190396 .666
VAR02	2.8401273	.73325433	15.002593 .001	.6482339 .49979	VAR06	.00920	.29619	.16931918E-02 .968
VAR10	588.15976	198.73155	8.7590491 .007	.5275175 .75652	VAR07	-.00918	.29621	.16867518E-02 .968
VAR04	258.56661	709.98480	.13263154 .719	.7769881 1.24507	VAR11	-.09652	.32558	.18806998 .669
VAR08	-22.854322	34.506747	.43866062 .515	-.8520662 -1.05413	VAR12	.05816	.63360	.67886270E-01 .797
VAR09	-189.35684	332.88084	.32358202 .575	-.6543271 -.91085				
(CONSTANT)	5949.9265	1929.1494	9.5124297 .006					

LOCK REGRESSION 05/16/78. PAGE 9

FILE LOCK123 (CREATION DATE = 05/16/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 7.. VAR05 QUAL

MULTIPLE R	.83257	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F SIGNIFICANCE
R SQUARE	.69317	REGRESSION	7.	194970688.17599	27852955.45371	6.45479 .000
ADJUSTED R SQUARE	.58578	RESIDUAL	20.	86301726.78830	4315086.33942	
STD DEVIATION	2077.27859	COEFF OF VARIABILITY	41.8 PCT			

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION			
VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY	VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR03	-1.0391493	.61685563	2.8378461 .108	-.6998444 -.70957	VAR06	.02772	.28619	.14607239E-01 .905
VAR02	3.0432805	.87990995	11.962103 .002	.6946018 .53554	VAR07	-.02770	.28621	.14591690E-01 .905
VAR10	764.54212	450.76712	2.8767252 .105	.6857139 .98339	VAR11	.35576	.00000	2.7531237 .113
VAR04	227.07451	727.61253	.97394944E-01 .758	.6823548 1.09343	VAR12	.08829	.58707	.14927596 .704
VAR08	-22.300398	35.213177	.40106504 .534	-.8314145 -1.02858				
VAR09	-165.96405	343.65082	.23323477 .634	-.5734928 -.79833				
VAR05	-111.65221	254.87390	.19190396 .666	-.1728734 -.29379				
(CONSTANT)	6054.8996	1981.9134	9.3335000 .006					

LOCK REGRESSION 05/16/78. PAGE 10

FILE LOCK123 (CREATION DATE = 05/16/78.)

* M U L T I P L E R E G R E S S I O N *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 8.. VAR12 FLOW1

MULTIPLE R	.83401	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.69557	REGRESSION	8.	195643443.27964	24455430.40995	5.42635	.001
ADJUSTED R SQUARE	.56738	RESIDUAL	19.	85628971.68465	4506787.98340		
STD DEVIATION	2122.91968	COEFF OF VARIABILITY	42.7 PCT				

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION			
VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY	VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR03	-1.0898295	.64391123	2.8646074	-.7339765	VAR06	.01097	.27558	.21660893E-02
			.107	-.74418				.963
VAR02	3.2414682	1.0352602	9.8035755	.7398364	VAR07	-.01097	.27562	.21647383E-02
			.005	.57041				.963
VAR10	783.90522	463.38925	2.8617732	.7030806	VAR11	.38190	.00000	3.0734431
			.107	1.00830				.097
VAR04	259.19316	748.23172	.11999823	.7788708				
			.733	1.24809				
VAR08	-23.943643	36.237322	.43658444	-.8926788				
			.517	-1.10438				
VAR09	-181.61763	353.53061	.26391371	-.6275841				
			.613	-.87362				
VAR05	-139.98630	270.60071	.26761672	-.2167437				
			.611	-.36834				
VAR12	1472.5296	3811.2646	.14927596	.0638295				
			.704	.29778				
(CONSTANT)	4802.2266	3822.8902	1.5779805					
			.224					

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION.

LOCK REGRESSION 05/16/78. PAGE 11

FILE LOCK123 (CREATION DATE = 05/16/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

SUMMARY TABLE

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	SIMPLE R	OVERALL F	SIGNIFICANCE
1	VAR03		6.26899	.019	.44076	.19427	.19427	-.44076	6.26899	.019
2	VAR02		15.66460	.001	.71039	.50465	.31038	.43656	12.73472	.000
3	VAR10		3.57596	.071	.75425	.56889	.06424	.32075	10.55658	.000
4	VAR04		8.05279	.009	.82504	.68069	.11180	.03324	12.25730	.000
5	VAR08		.33374	.569	.82792	.68546	.00477	.04819	9.58853	.000
6	VAR09		.32358	.575	.83080	.69023	.00477	.10005	7.79870	.000
7	VAR05		.19190	.666	.83257	.69317	.00294	.36852	6.45479	.000
8	VAR12		.14928	.704	.83401	.69557	.00239	-.26081	5.42635	.001

FLOW II

REGIONAL FLOW AVERAGES

UNITED COMPUTING SYSTEMS INC.
S P S S - - STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

VERSION 6.5 - - SEPT. 1, 1976

```
RUN NAME        LOCK REGRESSION
FILE NAME       LOCK123
VARIABLE LIST   VAR01 TO VAR12
INPUT MEDIUM    CARD
N OF CASES      28
INPUT FORMAT    FIXED(5X,3(F5.0),F5.1,F5.2,2(F5.0),2(F5.1),2(F5.2),5X,F5.2)
```

ACCORDING TO YOUR INPUT FORMAT, VARIABLES ARE TO BE READ AS FOLLOWS

VARIABLE	FORMAT	RECORD	COLUMNS
VAR01	F 5. 0	1	6- 10
VAR02	F 5. 0	1	11- 15
VAR03	F 5. 0	1	16- 20
VAR04	F 5. 1	1	21- 25
VAR05	F 5. 2	1	26- 30
VAR06	F 5. 0	1	31- 35
VAR07	F 5. 0	1	36- 40
VAR08	F 5. 1	1	41- 45
VAR09	F 5. 1	1	46- 50
VAR10	F 5. 2	1	51- 55
VAR11	F 5. 2	1	56- 60
VAR12	F 5. 2	1	66- 70

THE INPUT FORMAT PROVIDES FOR 12 VARIABLES. 12 WILL BE READ
IT PROVIDES FOR 1 RECORDS (*CARDS*) PER CASE. A MAXIMUM OF 70 *COLUMNS* ARE USED ON A RECORD.

```
VAR LABELS      VAR01,BOATS/VAR02,SLIP-B/VAR03,COMML/VAR04,MILES-B/
                VAR05,QUAL/VAR06,SLIPUP/VAR07,SLIPDWN/VAR08,MILESUP/
                VAR09,MILESDWN/VAR10,QUALUP/VAR11,QUALDWN/VAR12,FLOW2
REGRESSION      VARIABLES=VAR01 TO VAR12/
                REGRESSION=VAR01 WITH VAR02 TO VAR12(1) RESID = 0
OPTIONS         2,13
STATISTICS      1,2
READ INPUT DATA
```

05420) CM NEEDED FOR REGRESSION

FILE LOCK123 (CREATION DATE = 05/17/78.)

* MULTIPLE REGRESSION *

VARIABLE	MEAN	STANDARD DEV	CASES
VAR01	4971.5357	3227.6147	28
VAR02	874.8571	736.6745	28
VAR03	3394.7500	2173.7283	28
VAR04	23.4393	9.6989	28
VAR05	13.0814	4.9974	28
VAR06	437.3929	535.2020	28
VAR07	437.3929	535.2020	28
VAR08	229.3071	120.3335	28
VAR09	23.9143	11.1531	28
VAR10	6.3946	2.8948	28
VAR11	6.6900	2.7497	28
VAR12	1.0129	.0406	28

CORRELATION COEFFICIENTS.

A VALUE OF 99.00000 IS PRINTED
IF A COEFFICIENT CANNOT BE COMPUTED.

VAR02	.43656										
VAR03	-.44076	.23739									
VAR04	.03324	.55059	.33801								
VAR05	.36852	.48186	.18687	.67713							
VAR06	.21621	.68828	.48647	.46395	.49527						
VAR07	.38484	.68828	-.15977	.29388	.16803	-.05253					
VAR08	.06819	.41804	.24487	.83630	.54991	.43884	.13657				
VAR09	.10005	.39106	-.00327	.73664	.51075	.11572	.42250	.29424			
VAR10	.32075	.27348	.13720	.64142	.89164	.39466	-.01820	.66173	.33527		
VAR11	.33208	.58795	.15904	.55587	.87906	.48486	.32446	.30308	.57564	.56798	
VAR12	-.47828	-.08126	.44468	.42340	.04390	-.04086	-.07111	.38537	.26014	.07357	.00239
	VAR01	VAR02	VAR03	VAR04	VAR05	VAR06	VAR07	VAR08	VAR09	VAR10	VAR11

FILE LOCK123 (CREATION DATE = 05/17/78.)

* M U L T I P L E R E G R E S S I O N *

DEPENDENT VARIABLE.. VAR01 BOATS

MEAN RESPONSE 4971.53571 STD. DEV. 3227.61473

VARIABLE(S) ENTERED ON STEP NUMBER 1.. VAR12 FLOW2

MULTIPLE R	.47828	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.22875	REGRESSION	1.	64340515.93749	64340515.93749	7.71142	.010
ADJUSTED R SQUARE	.19908	RESIDUAL	26.	216931899.02680	8343534.57795		
STD DEVIATION	2888.51771	COEFF OF VARIABILITY	58.1 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	-37993.910	13681.911	7.7114220 .010	-.4782761 -7.74055
(CONSTANT)	63453.939	13868.568	9.8173671 .004	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR02	.45435	.99340	6.5033856 .017
VAR03	-.28996	.80226	2.2948939 .142
VAR04	.29630	.82074	2.4061311 .133
VAR05	.44397	.99807	6.1374729 .020
VAR06	.22412	.99833	1.3222102 .261
VAR07	.40050	.99494	4.7760575 .038
VAR08	.28690	.85149	2.2424426 .147
VAR09	.26471	.93233	1.8837913 .182
VAR10	.40639	.99459	4.9457006 .035
VAR11	.37944	.99999	4.2046554 .051

LOCK REGRESSION 05/17/78. PAGE 4

FILE LOCK123 (CREATION DATE = 05/17/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 2.. VAR02 SLIP-B

MULTIPLE R	.62287	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F SIGNIFICANCE
R SQUARE	.38796	REGRESSION	2.	109122743.60411	54561371.80205	7.92354 .002
ADJUSTED R SQUARE	.33900	RESIDUAL	25.	172149671.36018	6885986.85441	
STD DEVIATION	2624.11639	COEFF OF VARIABILITY	52.8 PCT			

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	-35409.658	12470.774	8.0622573 .009	-.4457450 -7.21405
VAR02	1.7540175	.68780316	6.5033856 .017	.4003390 .30866
(CONSTANT)	39301.946	12703.867	9.5709766 .005	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR03	-.50611	.72695	8.2642938 .008
VAR04	.00286	.47624	.19658447E-03 .989
VAR05	.28603	.76086	2.1383930 .157
VAR06	-.13668	.52604	.45689066 .506
VAR07	.13676	.52604	.45743299 .505
VAR08	.08352	.64823	.16858790 .685
VAR09	.08709	.76129	.18343495 .672
VAR10	.32595	.91597	2.8530024 .104
VAR11	.15479	.65179	.58919007 .450

FILE LOCK123 (CREATION DATE = 05/17/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 3.. VAR03 COMML

MULTIPLE R	.73806	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.54473	REGRESSION	3.	153217787.72065	51072595.90688	9.57203	.000
ADJUSTED R SQUARE	.48782	RESIDUAL	24.	128054627.24364	5335609.46849		
STD DEVIATION	2309.89382	COEFF OF VARIABILITY	46.5 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	-18179.887	12507.049	2.1128602 .159	-.2288526 -3.70381
VAR02	2.3142272	.63603124	13.238998 .001	.5282019 .40724
VAR03	-.68953332	.23985699	8.2642938 .008	-.4643857 -.47084
(CONSTANT)	23781.339	12429.850	3.6359169 .069	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR04	-.00799	.47607	.14688251E-02 .970
VAR05	.34234	.76061	3.0532935 .094
VAR06	.16454	.38864	.63999828 .432
VAR07	-.16446	.38862	.63938811 .432
VAR08	.05405	.64476	.67401063E-01 .797
VAR09	-.00671	.68697	.17424393 .680
VAR10	.39796	.91493	4.3280190 .049
VAR11	.17610	.85176	.73610198 .400

FILE LOCK123 (CREATION DATE = 05/17/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 4.. VAR10 QUALUP

MULTIPLE R	.78539	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.61683	REGRESSION	4.	173498176.73289	43374544.18322	9.25652	.000
ADJUSTED R SQUARE	.55020	RESIDUAL	23.	107774238.23140	4685836.44484		
STD DEVIATION	2164.67929	COEFF OF VARIABILITY	43.5 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	-19935.689	11751.124	2.8770854 .103	-.2509551 -4.06152
VAR02	1.9810539	.61718640	10.302909 .004	.4521580 .34461
VAR03	-.70532512	.22490620	9.8350335 .005	-.4750211 -.48162
VAR10	312.99645	158.45092	4.3280190 .049	.2407249 .40259
(CONSTANT)	23823.304	11648.579	4.1827131 .052	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR04	-.40974	.25853	4.4387969 .047
VAR05	-.04037	.14361	.35904345E-01 .851
VAR06	.04116	.34792	.37338635E-01 .849
VAR07	-.04108	.34791	.37188463E-01 .849
VAR08	-.30504	.36173	2.2571115 .147
VAR09	-.21652	.63924	1.0821371 .310
VAR11	-.04001	.47470	.35274652E-01 .853

FILE LOCK123 (CREATION DATE = 05/17/78.)

MULTIPLE REGRESSION

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 5.. VAR04 MILES-B

MULTIPLE R	.82533	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.68116	REGRESSION	5.	19159234[illegible].72383	3831846[illegible].34476	9.40015	.000
ADJUSTED R SQUARE	.60870	RESIDUAL	22.	8968007[illegible].24046	4076366.96548		
STD DEVIATION	2019.00148	COEFF OF VARIABILITY	40.6 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	-2496.2569	13735.386	.32976155E-01 .858	-.0313983 -.50816
VAR02	2.9887893	.74843801	15.946998 .001	.6821647 .52595
VAR03	-.73056071	.21011223	12.089545 .002	-.4920167 -.49885
VAR10	584.19593	190.42316	9.4119045 .006	.5239624 .75142
VAR04	-166.00163	78.791563	4.4387969 .047	-.4988319 -.79934
(CONSTANT)	7601.4050	13316.338	.32585031 .574	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR05	-.02905	.14345	.17739929E-01 .895
VAR06	.02822	.34743	.16738404E-01 .898
VAR07	-.02820	.34742	.16711514E-01 .898
VAR08	-.11719	.26320	.29242855 .594
VAR09	.09611	.33978	.19580626 .663
VAR11	-.02824	.47412	.16781273E-01 .898

FILE LOCK123 (CREATION DATE = 05/17/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 4.. VAR08 MILESHP

MULTIPLE R	.82797	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.68554	REGRESSION	8.	192824000.84734	32137333.47456	7.63026	.000
ADJUSTED R SQUARE	.59570	RESIDUAL	21.	88448414.11694	4211829.24366		
STD DEVIATION	2052.27416	COEFF OF VARIABILITY	41.3 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	-1071.3414	14207.541	.5886145E-02 .941	-.0134863 -.21827
VAR02	3.0091552	.76170372	15.606914 .001	.6868131 .52953
VAR03	-.74379796	.21497306	11.971316 .002	-.5009317 -.50789
VAR10	620.88894	205.10996	9.1633512 .006	.5568721 .79862
VAR04	-139.50168	93.892736	2.2074702 .152	-.4192000 -.67174
VAR08	-3.4596731	6.3977192	.29242855 .594	-.1289853 -.15957
(CONSTANT)	6111.6138	13813.304	.19575671 .663	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR05	-.11357	.09949	.26134816 .615
VAR06	.05560	.33078	.62023314E-01 .806
VAR07	-.05557	.33077	.61956452E-01 .806
VAR09	-.15632	.00569	.50097099 .487
VAR11	-.11259	.32886	.25680396 .618

FILE LOCK123 (CREATION DATE = 05/17/78.)

* M U L T I P L E R E G R E S S I O N *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 7.. VAR09 MILESDWN

MULTIPLE R	.83260	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.69323	REGRESSION	7.	194985366.24242	27855052.32035	6.45637	.000
ADJUSTED R SQUARE	.58586	RESIDUAL	20.	86287048.72187	4314352.43609		
STD DEVIATION	2077.10193	COEFF OF VARIABILITY	41.9 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	8894.8706	20125.445	.19533875 .663	.1119707 1.81216
VAR02	2.9351022	.7779857A	14.233219 .001	.6699111 .51650
VAR03	-1.3814869	.92685295	2.2216307 .152	-.9304014 -.94333
VAR10	609.32488	208.23327	8.5624411 .008	.5465004 .78374
VAR04	545.62952	972.63578	.31469891 .581	1.6396070 2.62735
VAR08	-38.573839	50.03155A	.59442583 .450	-1.4381291 -1.77918
VAR09	-336.26623	475.09118	.50097099 .487	-1.1619760 -1.61752
(CONSTANT)	-1947.2626	18066.026	.12099997E-01 .914	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR05	-.09962	.09848	.19044532 .667
VAR06	.00498	.29564	.47122858E-03 .983
VAR07	-.00497	.29566	.46914515E-03 .983
VAR11	-.09852	.32551	.18624252 .671

FILE LOCK123 (CREATION DATE = 05/17/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 8.. VAR05 QUAL

MULTIPLE R	.83443	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F SIGNIFICANCE
R SQUARE	.69627	REGRESSION	8.	195841675.94706	24480209.49338	5.44446 .001
ADJUSTED R SQUARE	.56838	RESIDUAL	19.	85430739.01722	4496354.68512	
STD DEVIATION	2120.46096	COEFF OF VARIABILITY	42.7 PCT			

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	9043.8552	2054B.392	.19170976 .665	.1138461 1.84252
VAR02	3.1433083	.92650859	11.509993 .003	.7174323 .55314
VAR03	-1.3514624	.94869881	2.0293231 .171	-.9101805 -.92283
VAR10	789.06756	463.49951	2.8982097 .105	.7077107 1.01494
VAR04	518.40890	994.89657	.27151200 .608	1.5578095 2.49628
VAR08	-38.273769	51.080583	.56142374 .463	-1.4269417 -1.76534
VAR09	-314.93546	487.46537	.41740301 .526	-1.0882678 -1.51492
VAR05	-113.55493	260.20812	.19044532 .667	-.1758194 -.29879
(CONSTANT)	-2013.4446	18443.248	.11918032E-01 .914	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR06	.02375	.28571	.10180673E-01 .921
VAR07	-.02374	.28573	.10153824E-01 .921
VAR11	.44657	.00000	4.4837753 .048

FILE LOCK123 (CREATION DATE = 05/17/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

VARIABLE(S) ENTERED ON STEP NUMBER 9.. VAR06 SLIPUP

MULTIPLE R	.83453	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.69644	REGRESSION	9.	195889872.84101	21765541.42678	4.58852	.003
ADJUSTED R SQUARE	.54466	RESIDUAL	18.	85382542.12328	4743474.56240		
STD DEVIATION	2177.95192	COEFF OF VARIABILITY	43.8 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
VAR12	8956.8645	21123.147	.17980210 .677	.1127511 1.82479
VAR02	3.1001954	1.0433261	8.8295378 .008	.7075922 .54555
VAR03	-1.3328345	.99178939	1.8059825 .196	-.8976350 -.91011
VAR10	793.03192	477.68790	2.7560866 .114	.7112663 1.02004
VAR04	482.94605	1080.7370	.19969041 .660	1.4512443 2.32552
VAR08	-36.586770	55.070185	.44138245 .515	-1.3640462 -1.68753
VAR09	-296.38162	533.44386	.30869180 .585	-1.0241538 -1.42567
VAR05	-118.57635	271.86597	.19023325 .668	-.1835942 -.31201
VAR06	.14768885	1.4651648	.10160673E-01 .921	.0244897 .01299
(CONSTANT)	-1956.7035	18951.651	.10659969E-01 .919	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE
VAR07	.00634	.00000	.68284315E-03 .979
VAR11	.44832	.00000	4.2763340 .054

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION.

FILE LOCK123 (CREATION DATE = 05/17/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. VAR01 BOATS

SUMMARY TABLE

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	SIMPLE R	OVERALL F	SIGNIFICANCE
1	VAR12		7.71142	.010	.47828	.22875	.22875	-.47828	7.71142	.010
2	VAR02		6.50339	.017	.62287	.38796	.15921	.43656	7.92354	.002
3	VAR03		8.26429	.008	.73806	.54473	.15677	-.44076	9.57203	.000
4	VAR10		4.32802	.049	.78539	.61683	.07210	.32075	9.25652	.000
5	VAR04		4.43880	.047	.82533	.68116	.06433	.03324	9.40015	.000
6	VAR08		.29243	.594	.82797	.68554	.00438	.04819	7.63026	.000
7	VAR09		.50097	.487	.83260	.69323	.00768	.10005	6.45637	.000
8	VAR05		.19045	.667	.83443	.69627	.00304	.36852	5.44446	.001
9	VAR06		.01016	.921	.83453	.69644	.00017	.21621	4.58852	.003

CORRELATION BETWEEN PLEASURE BOATS THROUGH
THE LOCKS AND RECREATION LOCKAGES

CORRELATION BETWEEN PLEASURE BOATS THROUGH THE LOCKS AND RECREATION LOCKAGES

Regression analysis was utilized to test the relationship between the number of pleasure boats passing through the 28 locks and the actual number of recreation lockages. It was hypothesized that a strong correlation existed between the two variables. The regression equation had a simple R of 0.97 and explained 95 percent of the variances. The data for the two variables in the regression analysis came from Corps of Engineers records for all 28 locks and covered the years 1971 through 1977 (196 data points). This model was interfaced with the Recreation Lockage Forecasting Model in order to convert the number of pleasure boats through each lock into the number of recreation lockages.

UNITED COMPUTING SYSTEMS INC.
S P S S - - STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

VERSION 6.5 - - SEPT. 1, 1976

```
RUN NAME        BOAT/LOCKAGE CORRELATION
FILE NAME       NIX
VARIABLE LIST   BOATS,LCKGES
INPUT MEDIUM    CARD
N OF CASES      28
INPUT FORMAT    FIXED (2F5.0)

ACCORDING TO YOUR INPUT FORMAT, VARIABLES ARE TO BE READ AS FOLLOWS

VARIABLE   FORMAT   RECORD     COLUMNS

BOATS      F 5. 0       1      1-   5
LCKGES     F 5. 0       1      6-  10

THE INPUT FORMAT PROVIDES FOR   2 VARIABLES.    2 WILL BE READ
IT PROVIDES FOR  1 RECORDS (*CARDS*) PER CASE.  A MAXIMUM OF   10 *COLUMNS* ARE USED ON A RECORD.

VAR LABELS      BOATS,BOATS/LCKGES,LOCKAGES/
REGRESSION      VARIABLES=BOATS,LCKGES/
                REGRESSION=LCKGES WITH BOATS(2)/
STATISTICS      ALL
READ INPUT DATA

051700 CM NEEDED FOR REGRESSION
```

FILE NIX (CREATION DATE = 05/16/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. LCKGES LOCKAGES

MEAN RESPONSE 2088.71429 STD. DEV. 1132.16678

VARIABLE(S) ENTERED ON STEP NUMBER 1.. BOATS BOATS

MULTIPLE R	.97427	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F	SIGNIFICANCE
R SQUARE	.94919	REGRESSION	1.	32850280.12765	32850280.12765	485.73986	0
ADJUSTED R SQUARE	.94724	RESIDUAL	26.	1758363.58663	67629.36872		
STD DEVIATION	260.05647	COEFF OF VARIABILITY	12.5 PCT				

VARIABLES IN THE EQUATION

VARIABLE	B	STD ERROR B	F SIGNIFICANCE	BETA ELASTICITY
BOATS	.34524190	.15664684E-01	485.73986 0	.9742653 .80234
(CONSTANT)	412.86079	90.538418	20.794164 .000	

VARIABLES NOT IN THE EQUATION

VARIABLE	PARTIAL	TOLERANCE	F SIGNIFICANCE

ALL VARIABLES ARE IN THE EQUATION.

COEFFICIENTS AND CONFIDENCE INTERVALS.

VARIABLE	B	STD ERROR B	T	95.0 PCT CONFIDENCE INTERVAL
BOATS	.34524190	.15664684E-01	22.039507	.31304268 , .37744112
CONSTANT	412.86079	90.538418	4.5600619	226.75640 , 598.96517

VARIANCE/COVARIANCE MATRIX OF THE UNNORMALIZED REGRESSION COEFFICIENTS.

	BOATS
BOATS	.00025

FILE NIX (CREATION DATE = 05/16/78.)

* MULTIPLE REGRESSION *

DEPENDENT VARIABLE.. LCKGFS LOCKAGES

SUMMARY TABLE

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	SIMPLE R	OVERALL F	SIGNIFICANCE
1	BOATS		485.73986	0	.97427	.94919	.94919	.97427	485.73986	0

APPENDIX D

GRAVITY MODEL DOCUMENTATION

GRAVITY MODEL DOCUMENTATION

The purpose of this appendix is to give sufficient computer documentation so that programmers and the technical staff in the St. Paul District may utilize the program and update the lockage forecasts in subsequent years.

1. Overall Description of the Model: The gravity model was calibrated around the present supply of commercial marina slips in the 28 pools comprising the Upper Mississippi River. The inputs include population forecasts, growth in boat registration, distance from market areas to pools, market penetration rates, and moorage capacity of the 28 pools. The outputs from the model are essentially the potential markets for slippage on the Upper Mississippi River.

Gravity models in general are based on the concept that a specific and measurable relationship exists between the number of visitors arriving at a given destination from specific markets and a series of independent variables. The most important variables usually are: (1) the magnitude (size) of the population in the market area, and (2) the distance between the destination and market. The model typically yields high correlation between distance to populated centers and the number of visits. Correlation with other variables such as income of the population, urbanization, highway quality, and competition from other recreation areas may or may not improve the overall results of the model.

The general formula for the gravity model used in the Upper Mississippi analysis is:

$$T_{ij} = \frac{P_i \dfrac{A_j}{d_{ij}^{b}}}{\dfrac{A}{d_{i1}^{b}} + \dfrac{A_2}{d_{i2}^{b}} + \ldots + \dfrac{A_n}{d_{in}^{b}}}$$

Where T_{ij} is the potential slip market from county i to pool j

P_i is the total slip market produced by county i

A_j is the total slip market attracted by pool j

d_{ij} is the spatial separation of county i and pool j

b is an empirically determined exponent which expresses the average areawide effect of spatial separation between zones on the amount of slip interchange. (This factor was developed from the origin/destination data developed in the 1977 recreation lockage survey.)

n is the number of Mississippi pools (28)

It may be noted in this equation that four factors are of major importance: trip productions, trip attractions, spatial distance separation, and the number of areas. Of course, the latter two are simply the distance between each county and the 28 Upper Mississippi pools, thus forming a matrix of 162 primary market counties by 28 pools. The trip productions (the market generated by each county) were composed of the following specific variables:

- Population forecasts for 162 counties (1980, 1985, 1990, 1995, 2000).
- Boat registration per 1,000 population in 162 counties for 1976.
- Growth in boat registration for five states in 1980, 1985, 1990, 1995, and 2000.
- Market penetration rates for 162 counties, six distance zones, and 5 years (1980, 1985, 1990, 1995, and 2000).

2. Program Flow: The model basically has two component sections. The first section is a subroutine that generates the demand for trip productions; the second portion is the gravity model allocation itself.

a. Demand: Figure D-1 shows the overall flow of the model. First, the population input for 162 counties and 5 years (1980, 1985, 1990, 1995, and 2000) is multiplied by the boat registration per 1,000 population (1976). This essentially, in terms of the present registration figures, calculates the number of total boats that will be registered for the 5 forecast years. Of course, this assumes that the 1976 per capita rate would be constant. To provide for future growth, these calculated estimates of boat registration are multiplied by state growth factors to develop the adjusted boat registration for future years. This adjusted figure is an interim model output and provides boat registration for the 162 counties and 5 forecast years.

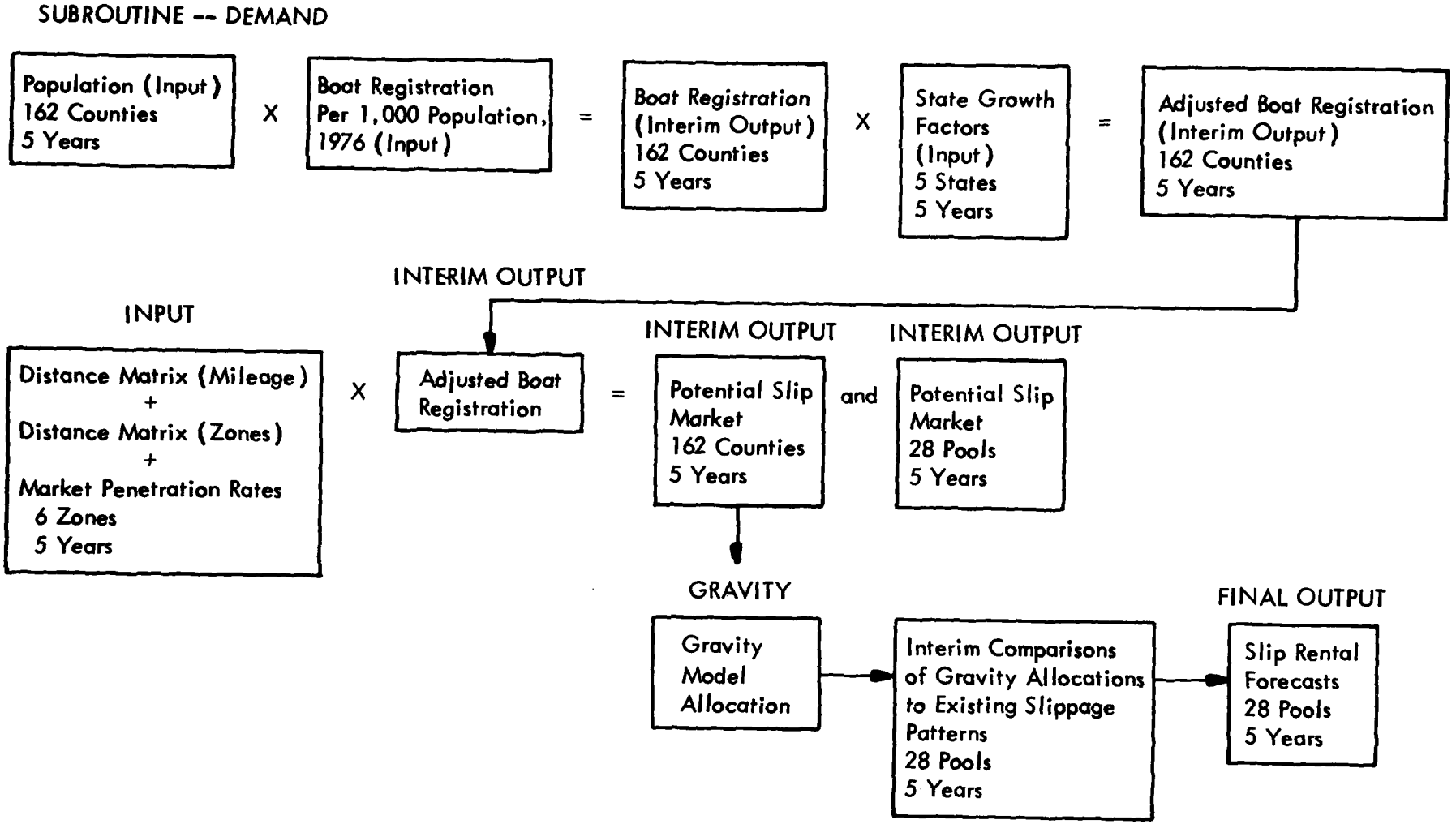


Figure D-1 - Program Flow (Gravity Model)

Next, this interim output is multiplied by a combination of the two distance matrices (both mileage and zones) and the market penetration rates to develop the gross slip market for the 162 counties and 5 years. This interim output is then input into the gravity model and allocated using the equation previously described. To provide the user the advantage of examining these numbers both at the county and the resource area level, two interim tables are generated by the model. One is the potential slip market by 162 counties and 5 years, and the second is the potential slip market for the 28 pools and 5 forecast years. The potential slip market input is the basis for the trip productions that are allocated to the attractions (28 reservoirs) using the gravity equation.

b. Allocation: The particular formation of the gravity model has been referred to by traffic planners as the "F-factor" form. The F-factor form of the gravity model is calibrated around trip productions to reproduce a trip distribution pattern similar to that provided by the interim potential slip market input. It is achieved in the following manner. Assumed values were used for the first set of F-factors, these values followed a somewhat smooth curve (assumed values were developed from the lockage survey data). As the gravity model was being calibrated, new F-factors were calculated for each model iteration by:

$$F(d)_{new} = F(d)_{old} \frac{\%\text{ of trips in } (d)_{new}}{\%\text{ of trips in } (d)_{old}}$$

where $F(d)_{old}$ is the F-factor of the previous iteration for the distance in question.

The relative size of the F-factors is of critical importance to the gravity model distribution. The distribution of F-factors is affected by several factors:

- The demand for a given length trip as indicated by the trip length frequency distribution curve.
- The potential for having a given trip length.
- The interaction caused by competition with attractions at other lengths of trips.

It is difficult to use an areawide term to describe what will happen for individual counties in any model. The influence of one large trip interchange at a particular distance will affect all other trip interchanges at the same distance. The interaction caused by large trip interchanges will affect those of other distances also.

The calibration criteria center around two factors. One is the ratio of actual trip length to computed trip length by the model, and the second is the standard deviation of the ratios of percent of trips distributed to each distance band compared to the desired distribution. The model will continue to reiterate as presently programmed until the trip length ratio reaches a level of 1.7 and the standard deviation is reduced to 1.00.[1/] At that time, the model prints a matrix that displays a number of potential slips being sought at each pool for all 162 counties.

This process is repeated and reiterated until the criteria have been reached for all 5 forecast years. At the conclusion of the program, a final table is printed that shows the potential slip market demand for each of the 28 Mississippi pools for the 5 forecast years. Some of the basic inputs and outputs are described below:

3. Data Input Cards

a. Population Forecasts

Column	Contents
1-12	County name
13-15	County number
19-20	State number
21-30	1980 population
31-40	1985 population
41-50	1990 population
51-60	1995 population
61-70	2000 population

b. Present Boat Registration Per 1,000 Population (1976)

Column	Contents
1-3	County number
4-5	State name
7-10	Boat registration/1,000 population

1/ These constraints were empirically developed for the particular data used in the Upper Mississippi River model. Normally the gravity model converges if the ratios are within 0.05 standard deviation. Because of the problem of using an areawide F-factor term to describe trip distribution patterns over a 400-mile stretch of river, however, quick convergence with this lower limit could not be achieved.

c. Boat Registration Growth Factors

Column	Contents
1-2	State number
7-10	1980 growth factor
17-20	1985 growth factor
27-30	1990 growth factor
37-40	1995 growth factor
47-50	2000 growth factor
61-80	State name

d. Distance Matrix (Mileage)

Column	Contents
1-3	County number
5-6	State number
11-15	Distance from county to Lock 51
16-20, etc.	Continuing in Fields of 5.0 through Column 80 and from Column 11 through 80 or Card 2 for all other locks

e. Distance Matrix (Zones)

Column	Contents
1-3	County number
5-6	Column number
10-37	Zone each lock falls in, in terms of distance from county[1/]

1/

Zone Number	Mileage
1	0-25
2	26-50
3	51-75
4	76-99
5	100-150
6	150+

f. Market Penetration Rates

Column	Contents
1-4	Year
6-10	Distance Band 1 (Percent of Market)
16-20	Distance Band 2 (Percent of Market)
26-30	Distance Band 3 (Percent of Market)
36-40	Distance Band 4 (Percent of Market)
46-50	Distance Band 5 (Percent of Market)
56-60	Distance Band 6 (Percent of Market)

g. Moorage Capacity of Pools

Column	Contents
1-2	Pool number
7-10	Quality (distribution of commercial slips, 1977--percent)
70	Must be "3"

h. Friction Factors

Column	Contents
1-2	Distance (rounded to 10 miles) in sequence from 1 to 75
3-6	Friction factors
70	Must be "5"

i. Trip Length Frequency Factors

Column	Contents
1-2	Distance (rounded to 10 miles) in sequence from 1-75
3-6	Percentage (same as friction factors)
70	Must be "6"

4. Gravity Model Outputs: A number of interim outputs provided by the program give the user a cross-check on both data inputs and subsequent final output. These are described below:

a. Total Boat Registration: The resulting estimates of multiplying the 1976 per capita boat registration times population forecasts provide this interim output.

b. Adjusted Boat Registration: Applying the boat registration growth factors to the total boat registration provides this matrix. It is a matrix of 162 counties by the 5 forecast years.

c. Potential Slip Market: This interim output is provided in two forms. One is a matrix of 162 counties by 5 forecast years, and the second is a matrix of 28 pools by 5 forecast years. It is the resulting interim output from multiplying penetration rates times the adjusted boat registration. The first table is the basic trip productions input that is allocated in the gravity model.

d. Comparison Tables: Two basic comparison tables are provided as the model begins to reiterate the allocation process. The first table is a matrix of 28 reservoirs by the trips desired (slips) and the computed trips (slips) based on present moorage capacity. The computed trips are the model allocations. A third column provides a ratio between the two, and the fourth column provides a difference between computed and desired trips. At the end of three reiterations, a second table is output. For each distance zone, the final F-factor for the reiteration of the three tables is produced. A second column provides the trip length frequency factors; the third column produces the model trip length frequency results; the fourth column shows the ratio of the F-factors to the trip length frequency factors.

At the conclusion of this second table, the average trip length, the computed trip length, the ratio, between the two and the mean and standard deviation are produced. If the convergence criteria are not reached, the model goes through another set of reiterations. This process continues until the criteria are reached. At that time, yet another output is produced. It shows the number of trip productions, potential slip market generated for each separate pool by each county. The results of the final model allocation of potential slip market for each pool is then stored for the final output. The above process is repeated for each of the 5 forecast years and the final table outputs potential slip market for each of the 28 pools for the 5 forecast years. A few of the output tables for the runs on the Upper Mississippi River are shown in the next section.

5. Data for Upper Mississippi Gravity Analysis: The following pages contain the input data and interim and final outputs for the gravity analysis on the Upper Mississippi River (28 pools).

a. Input Data

- Population forecasts
- Distance matrix (mileage)
- Moorage capacity of pools
- Friction factors
- Trip length frequency factors

b. Interim Outputs

- Boat registration
- Adjusted boat registration
- Potential slip market (counties)
- Potential slip market (pools)

c. Final Output

- Potential slip market (28 pools and 5 years)

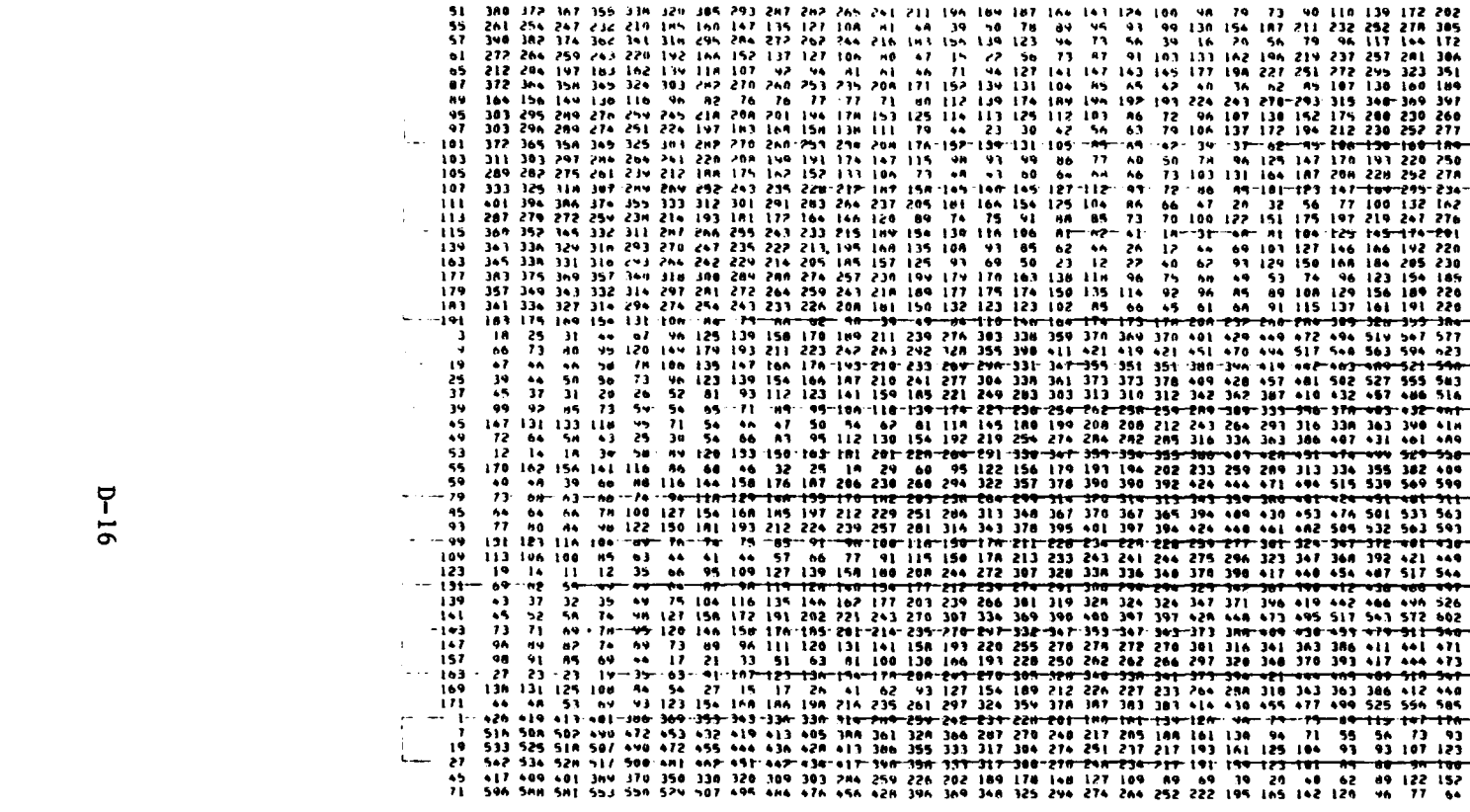
INPUT DATA

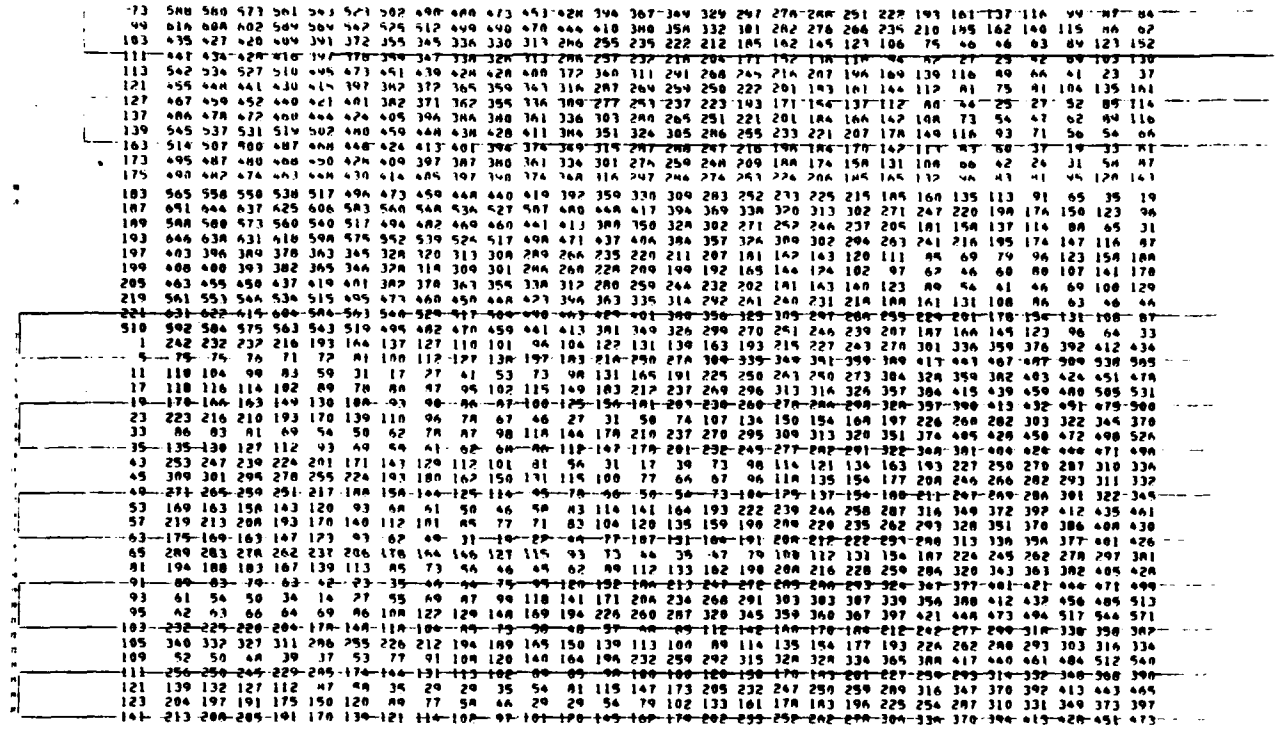
POPULATION DATA IN THOUSANDS OF PERSONS

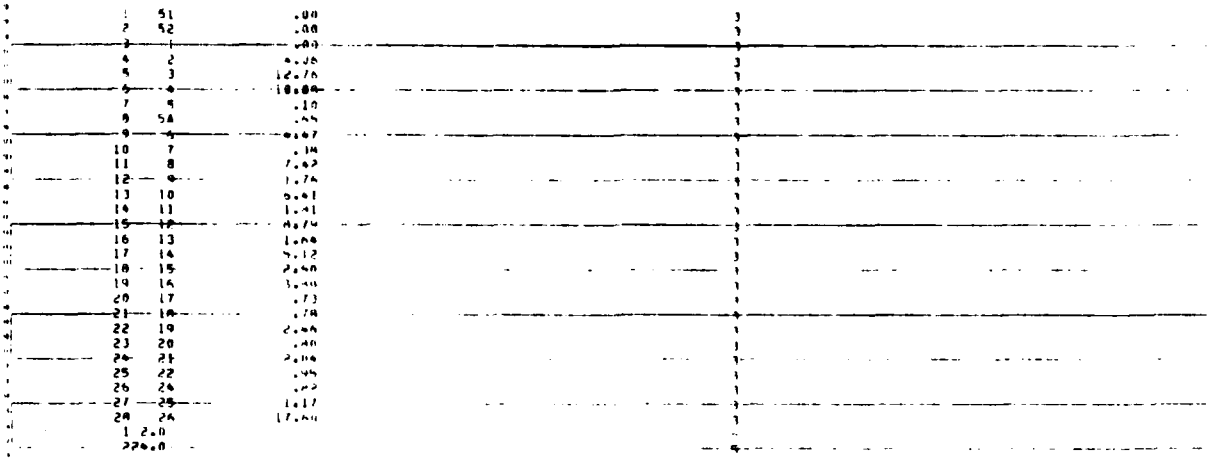
1	ADAMS	17	67.1	66.9	69.2	72.9	81.5
2	BOND	17	15.6	15.7	15.9	16.5	16.8
3	BOONE	17	26.1	28.8	31.6	34.7	38.0
4	BROWN	17	5.1	5.0	4.8	4.8	5.2
5	BUREAU	17	37.4	38.2	39.7	41.5	43.0
6	CALHOUN	17	5.4	5.4	5.3	5.3	5.3
7	CARROLL	17	19.4	19.7	20.1	20.9	22.0
8	CASS	17	13.5	13.9	14.4	14.8	15.6
9	CHRISTIAN	17	36.5	37.0	37.8	38.3	39.9
10	CLINTON	17	30.2	30.6	31.3	31.6	31.9
11	DE KALB	17	69.1	75.5	83.6	93.6	106.6
12	FAYETTE	17	20.5	21.5	22.7	23.3	23.4
13	FULTON	17	42.5	42.9	44.4	47.5	51.7
14	GREENE	17	16.2	16.0	16.1	16.0	16.0
15	HANCOCK	17	21.3	21.3	21.4	22.2	24.4
16	HENDERSON	17	8.7	8.9	9.0	9.5	10.4
17	HENRY	17	57.0	59.3	61.0	63.8	68.2
18	JEFFERSON	17	33.9	34.5	35.9	37.1	39.4
19	JERSEY	17	19.9	20.2	20.8	21.9	23.0
20	JO DAVIESS	17	21.5	22.3	23.2	24.0	25.1
21	KNOX	17	63.3	65.2	66.8	70.6	76.4
22	LA SALLE	17	107.5	110.8	116.0	121.8	126.4
23	LEE	17	34.6	38.0	41.4	45.1	49.1
24	MC DONOUGH	17	40.3	45.3	48.5	52.0	60.4
25	MACOUPIN	17	46.0	47.7	50.3	52.1	55.2
26	MADISON	17	251.3	250.3	265.3	285.7	293.1
27	MARION	17	39.4	42.1	43.8	45.2	45.6
28	MARSHALL	17	13.1	13.3	13.5	13.7	13.7
29	MASON	17	17.0	16.8	17.7	20.0	22.9
30	MENARD	17	10.7	11.0	11.6	12.0	12.8
31	MERCER	17	18.3	19.1	19.9	21.3	23.4
32	MONROE	17	20.9	21.3	21.4	23.9	25.2
33	MONTGOMERY	17	30.7	31.1	31.9	32.4	33.9
34	MORGAN	17	34.4	35.6	37.6	39.0	41.6
35	OGLE	17	43.4	45.4	47.7	50.7	54.2
36	PEORIA	17	204.8	212.0	219.4	227.2	237.5
37	PERRY	17	19.6	19.5	20.1	20.4	20.9
38	PIKE	17	18.3	18.0	18.1	18.5	20.2
39	PUTNAM	17	6.0	6.0	6.6	7.2	7.6
40	RANDOLPH	17	32.9	33.6	34.9	36.6	38.4
41	ROCK ISLAN	17	169.6	176.4	183.4	192.3	206.3
42	ST CLAIR	17	286.2	286.6	301.2	310.4	328.9
43	SANGAMON	17	170.1	178.9	192.4	201.9	217.2
44	SCHUYLER	17	7.3	7.2	7.2	7.4	8.1
45	SCOTT	17	5.6	5.5	5.5	5.4	5.6
46	STARK	17	7.3	7.5	7.6	7.3	7.4
47	STEPHENSON	17	46.2	47.9	49.8	52.0	54.5
48	WARREN	17	22.7	23.4	23.8	25.0	26.9
49	WASHINGTON	17	15.1	15.3	15.6	15.7	16.0
50	WHITESIDE	17	66.5	69.8	73.0	78.2	86.8
51	WINNEBAGO	17	243.1	260.0	278.6	298.5	321.1
52	ALLAMAKEE	19	15.7	16.3	16.8	17.2	17.6
53	BENTON	19	23.2	23.6	24.0	24.3	24.4
54	BLACK HAWK	19	138.6	142.0	145.1	147.7	150.0
55	BREMER	19	26.0	27.3	28.3	28.8	29.0
56	BUCHANAN	19	22.9	23.9	25.0	26.0	26.9
57	CEDAR	19	16.6	16.3	16.2	16.0	15.9
58	CHICKASAW	19	15.5	16.1	16.8	17.5	18.1

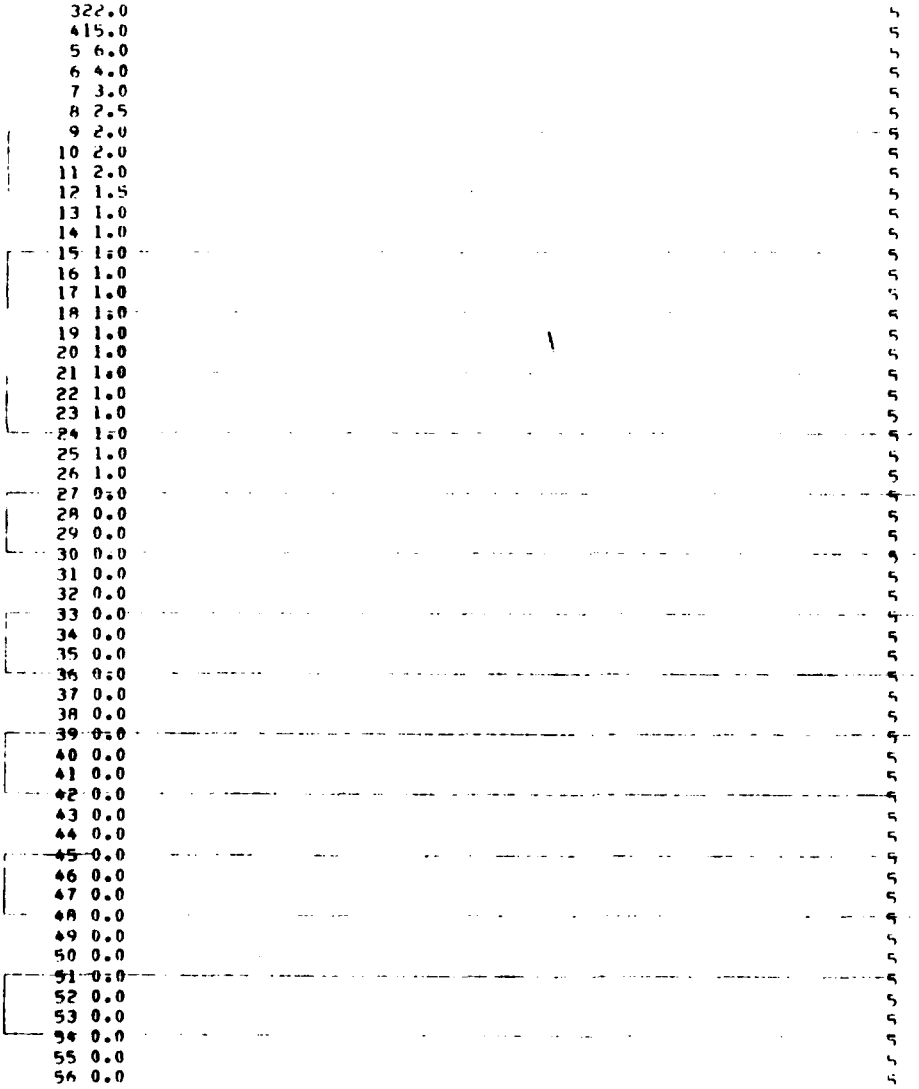
59	CLAYTON	19	21.5	22.3	23.0	23.7	24.2
60	CLINTON	19	59.9	62.1	64.3	66.2	67.7
61	DAVIS	19	8.8	9.2	9.5	9.7	9.8
62	DELAWARE	19	19.5	20.3	21.4	22.3	23.2
63	DES MOINES	19	45.0	44.8	44.8	44.9	45.2
64	DUBUQUE	19	98.3	103.1	108.3	113.2	117.5
65	FAYETTE	19	27.2	27.8	28.3	28.7	29.1
66	HENRY	19	17.3	17.1	17.1	17.2	17.3
67	HOWARD	19	11.7	12.1	12.5	12.8	13.0
68	IOWA	19	15.5	15.7	16.0	16.2	16.4
69	JACKSON	19	21.9	22.7	23.6	24.5	25.3
70	JEFFERSON	19	13.1	12.3	11.7	11.3	11.1
71	JOHNSON	19	80.7	84.7	88.6	92.1	95.2
72	JONES	19	20.3	20.8	21.3	21.8	22.3
73	KEOKUK	19	13.6	13.7	13.7	13.7	13.8
74	LEE	19	39.9	39.2	39.0	39.1	39.4
75	LINN	19	167.7	170.4	174.0	177.8	181.2
76	LOUISA	19	11.0	11.2	11.4	11.5	11.6
77	MUSCATINE	19	41.2	43.5	45.7	47.5	48.8
78	SCOTT	19	156.9	164.8	172.9	180.1	186.0
79	VAN BUREN	19	7.7	7.4	7.3	7.1	7.0
80	WAPELLO	19	37.9	36.6	35.7	35.1	34.8
81	WASHINGTON	19	16.4	15.8	15.4	15.2	15.1
82	WINNESHIEK	19	21.0	20.9	20.9	20.9	21.0
83	ANOKA	27	200.3	225.0	255.5	283.0	305.9
84	BENTON	27	23.4	25.2	27.0	28.6	29.7
85	CARVER	27	34.4	36.5	40.3	43.8	46.9
86	CHISAGO	27	23.9	28.5	34.0	38.4	44.9
87	DAKOTA	27	181.1	204.3	234.6	264.8	293.3
88	DODGE	27	13.2	13.4	13.6	13.6	13.6
89	FILLMORE	27	21.1	20.9	20.7	20.2	19.5
90	GOODHUE	27	38.4	41.1	43.6	46.3	48.6
91	HENNEPIN	27	983.4	1005.2	1018.1	1019.2	1011.1
92	HOUSTON	27	18.2	18.4	18.8	19.1	19.2
93	ISANTI	27	21.7	25.3	29.0	33.0	37.0
94	LE SUEUR	27	22.9	23.8	24.6	24.9	25.1
95	MC LEOD	27	31.4	34.1	36.8	39.5	42.3
96	MEEKER	27	19.7	20.5	20.9	21.4	21.4
97	MOWER	27	44.1	44.9	45.0	44.5	43.1
98	OLMSTED	27	97.8	105.9	114.1	121.5	127.4
99	RAMSEY	27	485.7	494.1	498.0	495.0	487.2
100	RICE	27	44.7	46.4	47.6	49.0	50.2
101	SCOTT	27	39.1	43.0	47.8	52.5	56.8
102	SHERBURNE	27	25.5	29.6	34.1	39.4	45.3
103	SIBLEY	27	16.1	16.3	16.4	16.5	16.5
104	STEELE	27	29.0	30.3	31.2	31.8	31.9
105	WABASHA	27	18.3	18.7	18.8	19.0	19.0
106	WASHINGTON	27	103.7	113.4	120.1	142.1	154.8
107	WINONA	27	46.8	48.1	48.9	49.6	50.1
108	WRIGHT	27	51.2	59.6	69.5	76.3	82.0
109	ADAIR	29	26.1	28.0	30.0	32.2	34.4
110	AUDRAIN	29	25.9	26.2	26.5	26.8	27.1
111	BOONE	29	94.5	98.2	101.9	105.9	109.9
112	CALLAWAY	29	28.4	29.9	31.4	33.0	34.7
113	CLARK	29	7.8	7.6	7.4	7.2	7.0
114	FRANKLIN	29	70.3	80.8	91.2	104.8	118.1
115	CASCONADE	29	13.8	14.8	15.7	16.9	18.1
116	JEFFERSON	29	134.9	156.9	178.9	208.1	237.3
117	KNOX	29	5.2	5.0	4.8	4.6	4.4
118	LEWIS	29	10.4	10.0	9.7	9.4	9.1
119	LINCOLN	29	21.5	24.0	26.4	29.4	32.4
120	MACON	29	16.2	16.8	17.4	18.0	18.7
121	MARION	29	27.7	27.8	27.5	27.4	27.3
122	MONROE	29	10.5	11.2	12.0	12.8	13.7
123	MONTGOMERY	29	11.8	12.4	12.9	13.5	14.1

124	PIKE	29	17.2	17.4	17.7	18.0	18.2
125	RALLS	29	9.2	10.2	11.2	12.4	13.6
126	RANDOLPH	29	25.6	27.7	29.8	32.2	34.7
127	ST CHARLES	29	133.4	165.4	197.3	244.6	291.8
128	ST FRANCOI	29	40.4	42.8	45.1	47.7	50.3
129	ST LOUIS	29	971.7	993.8	1015.9	1039.0	1062.1
130	STE GENEVI	29	14.3	15.2	16.2	17.3	18.4
131	SCHUYLER	29	5.3	5.8	6.2	6.8	7.3
132	SCOTLAND	29	5.5	5.5	5.5	5.5	5.5
133	SHELBY	29	7.6	7.6	7.5	7.4	7.4
134	WARREN	29	14.5	18.4	22.4	28.5	34.6
135	WASHINGTON	29	17.2	18.6	20.0	21.6	23.3
136	ST LOUIS C	29	454.5	400.0	340.4	296.3	252.2
137	ADAMS	55	12.7	14.9	17.3	19.9	22.5
138	BARRON	55	39.1	42.5	45.8	48.7	51.0
139	BUFFALO	55	14.6	15.3	15.9	16.4	16.8
140	CHIPPEWA	55	50.8	53.2	55.7	57.6	59.1
141	CLARK	55	31.7	33.0	34.4	35.5	36.0
142	CRAWFORD	55	15.8	16.3	16.8	17.2	17.2
143	DUNN	55	31.2	32.3	33.3	34.2	35.2
144	EAU CLAIRE	55	73.9	77.5	80.8	83.8	86.6
145	GRANT	55	53.2	56.0	58.8	61.3	63.4
146	GREEN	55	30.9	33.7	36.5	39.1	41.3
147	IOWA	55	19.7	20.4	21.2	21.8	22.0
148	JACKSON	55	16.3	17.9	17.7	18.1	18.3
149	JUNEAU	55	20.1	21.2	22.5	23.5	24.3
150	LA CROSSE	55	85.8	88.9	91.6	93.8	95.6
151	LAFAYETTE	55	18.7	19.7	20.9	21.9	22.4
152	MONROE	55	34.5	36.7	38.8	40.4	41.5
153	PEPIN	55	7.4	7.6	7.9	8.0	8.1
154	PIERCE	55	32.4	35.8	39.4	43.2	47.1
155	POLK	55	33.2	37.3	41.8	46.0	50.1
156	RICHLAND	55	16.0	15.8	15.6	15.2	14.7
157	ROCK	55	145.4	154.8	164.6	173.3	180.2
158	ST CROIX	55	43.6	49.9	57.0	64.1	70.8
159	SAUK	55	41.8	43.8	45.8	47.2	48.3
160	TREMPEALEA	55	24.7	25.8	26.8	27.7	28.3
161	VERNON	55	25.6	26.6	27.5	28.1	28.3
162	WOOD	55	70.0	73.5	77.0	79.9	81.5









```
 57 0.0                                                                  5
 58 0.0                                                                  5
 59 0.0                                                                  5
 60 0.0                                                                  5
 61 0.0                                                                  5
 62 0.0                                                                  5
 63 0.0                                                                  5
 64 0.0                                                                  5
 65 0.0                                                                  5
 66 0.0                                                                  5
 67 0.0                                                                  5
 68 0.0                                                                  5
 69 0.0                                                                  5
 70 0.0                                                                  5
 71 0.0                                                                  5
 72 0.0                                                                  5
 73 0.0                                                                  5
 74 0.0                                                                  5
 75 0.0                                                                  5
  1 2.0                                                                  6
  224.0                                                                  6
 322.0                                                                   6
 415.0                                                                   6
  5 6.0                                                                  6
  6 4.0                                                                  6
  7 3.0                                                                  6
  8 2.5                                                                  6
  9 2.0                                                                  6
 10 2.0                                                                  6
 11 2.0                                                                  6
 12 1.5                                                                  6
 13 1.0                                                                  6
 14 1.0                                                                  6
 15 1.0                                                                  6
 16 1.0                                                                  6
 17 1.0                                                                  6
 18 1.0                                                                  6
 19 1.0                                                                  6
 20 1.0                                                                  6
 21 1.0                                                                  6
 22 1.0                                                                  6
 23 1.0                                                                  6
 24 1.0                                                                  6
 25 1.0                                                                  6
 26 1.0                                                                  6
 27 0.0                                                                  6
 28 0.0                                                                  6
 29 0.0                                                                  6
 30 0.0                                                                  6
 31 0.0                                                                  6
 32 0.0                                                                  6
 33 0.0                                                                  6
 34 0.0                                                                  6
 35 0.0                                                                  6
 36 0.0                                                                  6
 37 0.0                                                                  6
 38 0.0                                                                  6
 39 0.0                                                                  6
 40 0.0                                                                  6
 41 0.0                                                                  6
 42 0.0                                                                  6
 43 0.0                                                                  6
 44 0.0                                                                  6
 45 0.0                                                                  6
 46 0.0                                                                  6
 47 0.0                                                                  6
 48 0.0                                                                  6
 49 0.0                                                                  6
 50 0.0                                                                  6
 51 0.0                                                                  6
 52 0.0                                                                  6
 53 0.0                                                                  6
 54 0.0                                                                  6
 55 0.0                                                                  6
 56 0.0                                                                  6
 57 0.0                                                                  6
 58 0.0                                                                  6
 59 0.0                                                                  6
```

```
60 0.0
61 0.0
62 0.0
63 0.0
64 0.0
65 0.0
66 0.0
67 0.0
68 0.0
69 0.0
70 0.0
71 0.0
72 0.0
73 0.0
74 0.0
75 0.0
AVERAGE TRIP LENGTH(ATL)=  49.01
```

INTERIM OUTPUTS

PER THOUSAND CAPITA BOAT REGISTRATIONS

1	ADAMS	17	2751.1	2742.9	2837.2	2988.9	3341.[illegible]
2	BOND	17	528.8	532.2	539.0	559.3	569.5
3	BOONE	17	584.6	645.1	707.8	777.1	851.2
4	BROWN	17	114.2	112.0	107.5	107.5	116.5
5	BUREAU	17	1208.0	1233.9	1282.3	1340.4	1488.9
6	CALHOUN	17	519.5	519.5	509.9	509.9	509.9
7	CARROLL	17	1160.1	1178.1	1202.0	1249.8	1315.6
8	CASS	17	742.5	764.5	792.0	814.0	858.0
9	CHRISTIAN	17	1693.6	1716.8	1753.9	1777.1	1851.4
10	CLINTON	17	1214.0	1230.1	1258.3	1270.3	1282.4
11	DE KALB	17	1050.3	1147.6	1270.7	1422.7	1620.3
12	FAYETTE	17	820.0	860.0	908.0	932.0	956.0
13	FULTON	17	2460.7	2483.9	2570.8	2750.2	2993.4
14	GREENE	17	523.3	516.8	520.0	516.8	516.8
15	HANCOCK	17	815.8	815.8	819.6	850.3	934.5
16	HENDERSON	17	605.5	619.4	626.4	661.2	723.8
17	HENRY	17	2171.7	2259.3	2324.1	2430.8	2598.4
18	JEFFERSON	17	1674.7	1704.3	1773.5	1832.7	1946.4
19	JERSEY	17	851.7	864.6	890.2	937.3	984.4
20	JO DAVIESS	17	1206.1	1251.0	1301.5	1366.4	1408.1
21	KNOX	17	2253.5	2321.1	2378.1	2513.4	2719.8
22	LA SALLE	17	3268.0	3368.3	3526.4	3702.7	3842.6
23	LEE	17	1231.8	1352.8	1473.8	1605.6	1748.0
24	MC DONOUGH	17	951.1	1069.1	1144.6	1227.2	1425.4
25	MACOUPIN	17	1646.8	1707.7	1800.7	1865.2	1976.2
26	MADISON	17	8896.0	8860.6	9391.6	10113.8	10375.7
27	MARION	17	1773.0	1894.5	1971.0	2034.0	2052.0
28	MARSHALL	17	467.7	474.8	481.9	489.1	489.1
29	MASON	17	1130.5	1117.2	1177.1	1330.0	1522.8
30	MENARD	17	542.5	557.7	588.1	608.4	649.0
31	MERCER	17	953.4	995.1	1036.8	1109.7	1219.1
32	MONROE	17	840.2	856.3	860.3	960.8	1013.0
33	MONTGOMERY	17	1172.7	1188.0	1218.6	1237.7	1295.0
34	MORGAN	17	1056.1	1092.9	1154.3	1197.3	1277.1
35	OGLE	17	1393.1	1457.3	1531.2	1627.5	1739.8
36	PEORIA	17	6717.4	6953.6	7196.3	7452.2	7790.0
37	PERRY	17	1140.7	1134.9	1169.8	1187.3	1216.4
38	PIKE	17	775.9	763.2	767.4	794.4	856.5
39	PUTNAM	17	273.6	273.6	301.0	328.3	346.5
40	RANDOLPH	17	1645.0	1680.0	1745.0	1830.0	1920.0
41	ROCK ISLAN	17	7140.2	7426.4	7721.1	8095.8	8685.2
42	ST CLAIR	17	8385.7	8397.4	8825.2	9094.7	9636.8
43	SANGAMON	17	6361.7	6690.9	7195.8	7551.1	8123.3
44	SCHUYLER	17	435.1	429.1	429.1	441.0	482.8
45	SCOTT	17	197.1	193.6	193.6	190.1	197.1
46	STARK	17	193.4	198.7	201.4	193.4	196.1
47	STEPHENSON	17	1720.7	1710.0	1777.9	1956.4	1945.7
48	WARREN	17	794.5	819.0	833.0	875.0	941.5
49	WASHINGTON	17	543.6	550.8	561.6	565.2	576.0
50	WHITESIDE	17	3338.3	3504.0	3664.6	3925.6	4307.2
51	WINNEBAGO	17	7098.5	7592.0	8135.1	8716.2	9376.1
52	ALLAMAKEE	19	1309.4	1359.4	1401.1	1434.5	1447.9
53	BENTON	19	1234.2	1255.5	1276.3	1292.8	1298.1
54	BLACK HAWK	19	7581.4	7767.4	7937.0	8079.2	8205.0
55	BREMER	19	1427.4	1498.8	1553.7	1581.1	1592.1
56	BUCHANAN	19	1257.2	1312.1	1372.5	1427.4	1476.8
57	CEDAR	19	869.8	854.1	848.9	838.4	827.9
58	CHICKASAW	19	708.3	735.8	767.8	799.7	827.2

59	CLAYTON	19	1812.4	1879.9	1938.9	1997.9	2040.1
60	CLINTON	19	4612.3	4781.7	4951.1	5097.4	5212.9
61	DAVIS	19	310.4	324.8	335.3	342.4	345.9
62	DELAWARE	19	840.4	874.9	922.3	961.1	999.9
63	DES MOINES	19	3447.0	3431.7	3431.7	3439.3	3462.3
64	DUBUQUE	19	4531.6	4752.9	4992.6	5218.5	5416.7
65	FAYETTE	19	1313.8	1342.7	1366.9	1386.2	1405.5
66	HENRY	19	839.0	829.3	829.3	834.2	839.0
67	HOWARD	19	408.1	413.8	427.9	437.8	444.6
68	IOWA	19	678.9	687.7	700.8	709.6	718.3
69	JACKSON	19	1780.5	1845.5	1918.7	1991.8	2056.9
70	JEFFERSON	19	810.5	873.2	949.2	928.6	917.3
71	JOHNSON	19	3623.4	3803.0	3978.1	4135.3	4274.5
72	JONES	19	1013.0	1037.9	1062.9	1087.8	1112.8
73	KEOKUK	19	505.9	509.6	509.6	509.6	513.4
74	LEE	19	2306.2	2265.8	2254.2	2260.0	2277.3
75	LINN	19	10363.9	10630.7	10753.2	10988.0	11198.2
76	LOUISA	19	1056.0	1075.2	1094.4	1104.0	1113.6
77	MUSCATINE	19	2921.1	3084.1	3240.1	3367.7	3459.9
78	SCOTT	19	8017.6	8421.3	8835.2	9203.1	9504.6
79	VAN BUREN	19	429.7	412.9	407.3	396.2	390.6
80	WAPELLO	19	2084.5	2013.0	1963.5	1930.5	1914.0
81	WASHINGTON	19	895.4	862.7	840.8	829.9	824.5
82	WINNESHIEK	19	1056.3	1051.3	1051.3	1051.3	1056.3
83	ANOKA	27	6569.8	7380.0	8380.4	9282.4	10033.5
84	BENTON	27	1633.3	1759.0	1884.6	1996.3	2073.1
85	CARVER	27	3075.4	3263.1	3602.8	3915.7	4192.9
86	CHISAGO	27	2385.2	2844.3	3393.2	3832.3	4481.0
87	DAKOTA	27	15628.9	17631.1	20246.0	22852.2	25311.8
88	DODGE	27	633.6	643.2	652.8	652.8	643.2
89	FILLMORE	27	797.6	790.0	782.5	763.6	737.1
90	GOODHUE	27	3098.9	3316.8	3518.5	3736.4	3922.0
91	HENNEPIN	27	10522.6	10755.6	10893.7	10905.4	10818.8
92	HOUSTON	27	1172.1	1185.0	1210.7	1230.0	1236.5
93	ISANTI	27	91.1	106.3	121.8	139.6	155.4
94	LE SUEUR	27	597.7	621.2	636.8	649.9	655.1
95	MC LEOD	27	216.7	235.3	253.9	272.5	291.9
96	MEEKER	27	236.4	246.0	250.8	256.8	256.8
97	MOWER	27	2508.5	2545.8	2551.5	2523.1	2443.8
98	OLMSTED	27	6112.5	6618.7	7131.2	7593.8	7962.5
99	RAMSEY	27	46141.5	46939.5	47310.0	47025.0	46284.0
100	RICE	27	3540.2	3674.9	3759.9	3800.8	3795.8
101	SCOTT	27	3804.4	4183.9	4650.9	5108.2	5524.6
102	SHERBURNE	27	392.7	455.8	523.6	606.8	697.6
103	SIBLEY	27	998.2	1010.6	1016.8	1013.0	1010.8
104	STEELE	27	1870.5	1954.3	2012.4	2051.1	2057.5
105	WABASHA	27	53.1	54.2	54.5	55.1	55.1
106	WASHINGTON	27	974.8	1066.0	1204.1	1335.7	1451.4
107	WINONA	27	3492.5	3795.1	3858.2	3913.4	3952.9
108	WRIGHT	27	2150.4	2503.2	2919.0	3204.6	3454.0
109	ADAIR	29	482.9	518.0	555.0	595.7	638.2
110	AUDRAIN	29	1059.3	1071.6	1083.8	1096.1	1108.4
111	BOONE	29	2655.4	2759.4	2863.4	2975.8	3088.2
112	CALLAWAY	29	1008.2	1061.4	1114.7	1171.5	1231.8
113	CLARK	29	274.6	267.5	260.5	253.4	246.4
114	FRANKLIN	29	3276.0	3765.3	4249.9	4883.7	5512.8
115	GASCONADE	29	756.2	811.8	872.9	939.6	1006.4
116	JEFFERSON	29	5935.6	6903.6	7871.6	9156.4	10441.2
117	KNOX	29	79.6	76.5	73.4	70.4	67.3
118	LEWIS	29	274.6	264.8	254.1	248.2	237.4
119	LINCOLN	29	860.0	960.0	1056.0	1176.0	1296.0
120	MACON	29	555.7	576.2	596.8	617.4	641.4
121	MARION	29	1144.8	1139.9	1135.7	1131.6	1127.5
122	MONROE	29	186.9	199.4	213.6	227.8	243.9
123	MONTGOMERY	29	273.8	287.7	299.3	313.2	327.1
124	PIKE	29	798.1	867.4	821.3	835.2	844.5

125	RALLS	29	198.7	220.3	241.9	267.8	293.8
126	RANDOLPH	29	983.0	1063.7	1144.3	1238.5	1332.5
127	ST CHARLES	29	6469.9	8021.9	9569.0	11863.1	14152.3
128	ST FRANCOI	29	1607.9	1703.4	1795.0	1898.5	2001.9
129	ST LOUIS	29	30317.0	31006.6	31696.1	32416.8	33137.5
130	STE GENEVI	29	499.1	530.5	565.4	603.8	642.2
131	SCHUYLER	29	97.5	106.7	114.1	125.1	134.3
132	SCOTLAND	29	79.2	79.2	79.2	79.2	79.2
133	SHELBY	29	165.7	165.7	163.5	161.3	161.3
134	WARREN	29	403.1	511.5	622.7	792.3	961.9
135	WASHINGTON	29	276.9	299.5	322.0	347.8	375.1
136	ST LOUIS C	29	5789.7	5040.0	4289.0	3733.4	3177.7
137	ADAMS	55	243.8	286.1	332.2	382.1	432.0
138	BARRON	55	2048.8	2227.0	2399.9	2551.9	2672.4
139	BUFFALO	55	1327.1	1398.8	1445.3	1490.8	1527.1
140	CHIPPEWA	55	563.9	590.5	618.3	639.4	656.0
141	CLARK	55	2028.8	2112.0	2201.6	2272.0	2304.0
142	CRAWFORD	55	1559.5	1608.8	1658.2	1697.6	1697.6
143	DUNN	55	2199.6	2277.1	2347.6	2411.1	2481.6
144	EAU CLAIRE	55	7094.4	7440.0	7756.8	8044.8	8313.6
145	GRANT	55	3489.9	3673.6	3857.3	4021.3	4159.8
146	GREEN	55	1279.3	1395.2	1511.1	1618.7	1709.8
147	IOWA	55	813.6	942.5	875.6	900.3	908.6
148	JACKSON	55	780.8	814.3	847.8	867.6	876.6
149	JUNEAU	55	1766.8	1863.5	1977.7	2065.6	2136.0
150	LA CROSSE	55	7619.0	7894.3	8134.1	8329.4	8489.3
151	LAFAYETTE	55	637.7	671.8	712.7	746.8	763.8
152	MONROE	55	1397.2	1486.3	1571.4	1636.2	1680.7
153	PEPIN	55	616.4	633.1	658.1	666.4	674.7
154	PIERCE	55	1999.1	2200.9	2431.8	2665.4	2906.1
155	POLK	55	999.3	1122.7	1258.2	1384.6	1508.0
156	RICHLAND	55	828.8	818.4	808.1	787.4	741.5
157	ROCK	55	8418.7	8962.9	9530.3	10034.1	10531.4
158	ST CROIX	55	3488.0	3992.0	4560.0	5128.0	5664.0
159	SAUK	55	3155.9	3306.9	3457.9	3563.6	3646.6
160	TREMPEALEA	55	1464.7	1529.9	1589.2	1642.6	1678.2
161	VERNON	55	1449.0	1505.6	1556.5	1590.5	1601.8
162	WOOD	55	6363.0	6681.1	6999.3	7262.9	7408.4

APPLY GROWTH RATES FOR EACH YEAR

1	ADAMS	17	3026.2	3346.3	3773.5	4333.9	5246.2
2	BOND	17	581.7	649.3	716.9	811.1	894.1
3	BOONE	17	643.1	787.0	941.4	1127.1	1336.4
4	BROWN	17	125.7	136.6	143.0	155.9	182.9
5	BUREAU	17	1328.8	1505.3	1705.5	1943.7	2180.6
6	CALHOUN	17	571.4	633.8	678.1	739.3	800.5
7	CARROLL	17	1276.1	1437.2	1598.6	1812.2	2065.5
8	CASS	17	816.7	932.7	1053.5	1180.3	1347.1
9	CHRISTIAN	17	1863.0	2094.5	2332.7	2576.8	2906.6
10	CLINTON	17	1335.4	1500.7	1673.5	1842.0	2013.3
11	DE KALB	17	1155.4	1400.1	1690.1	2062.9	2543.9
12	FAYETTE	17	902.0	1049.2	1207.6	1351.4	1469.5
13	FULTON	17	2706.8	3030.4	3419.1	3987.9	4699.7
14	GREENE	17	575.6	630.5	691.6	749.4	811.4
15	HANCOCK	17	897.4	995.3	1090.1	1232.9	1447.2
16	HENDERSON	17	666.1	755.7	833.1	958.7	1136.4
17	HENRY	17	2388.9	2756.4	3091.1	3524.6	4079.5
18	JEFFERSON	17	1842.1	2079.2	2358.7	2657.5	3055.8
19	JERSEY	17	936.9	1054.8	1184.0	1359.1	1545.5
20	JO DAVIESS	17	1326.8	1526.3	1731.0	1952.3	2210.7
21	KNOX	17	2478.8	2831.8	3162.8	3644.4	4270.1
22	LA SALLE	17	3594.8	4109.4	4690.1	5368.9	6032.8
23	LEE	17	1354.9	1650.4	1960.2	2328.1	2744.3
24	MC DONOUGH	17	1046.2	1304.3	1522.3	1779.4	2237.9
25	MACOUPIN	17	1811.5	2083.3	2395.0	2704.5	3102.6
26	MADISON	17	9785.6	10810.0	12490.9	14665.0	16289.9
27	MARION	17	1950.3	2311.3	2621.4	2949.3	3221.6
28	MARSHALL	17	514.4	579.3	641.0	709.2	767.9
29	MASON	17	1243.5	1363.0	1565.5	1928.5	2390.9
30	MENARD	17	596.7	680.4	782.2	882.2	1018.9
31	MERCER	17	1048.8	1214.0	1378.9	1609.1	1914.0
32	MONROE	17	924.2	1044.6	1144.2	1393.1	1598.5
33	MONTGOMERY	17	1290.0	1449.4	1620.7	1794.6	2033.1
34	MORGAN	17	1161.7	1333.4	1535.2	1736.1	2005.1
35	OGLE	17	1532.5	1778.8	2036.5	2359.8	2731.5
36	PEORIA	17	7389.2	8483.4	9571.1	10805.6	12230.3
37	PERRY	17	1254.8	1384.6	1555.9	1721.6	1909.7
38	PIKE	17	853.5	931.1	1020.7	1137.4	1344.7
39	PUTNAM	17	301.0	333.8	400.3	476.1	544.1
40	RANDOLPH	17	1809.5	2049.6	2320.8	2653.5	3014.4
41	ROCK ISLAN	17	7854.2	9060.3	10269.1	11739.0	13635.8
42	ST CLAIR	17	9224.2	10244.8	11737.5	13187.3	15129.7
43	SANGAMON	17	6997.9	8162.8	9570.4	10949.0	12753.5
44	SCHUYLER	17	478.6	523.5	570.7	634.5	757.0
45	SCOTT	17	216.8	236.2	257.5	275.6	309.5
46	STARK	17	212.8	242.5	267.9	280.5	307.9
47	STEPHENSON	17	1892.8	2086.2	2364.6	2691.8	3054.7
48	WARREN	17	874.0	999.2	1107.9	1248.7	1478.2
49	WASHINGTON	17	598.0	672.0	746.9	819.5	904.3
50	WHITESIDE	17	3672.1	4274.8	4873.9	5692.2	6762.2
51	WINNEBAGO	17	7808.4	9262.2	10819.7	12638.5	14720.5
52	ALLAMAKEE	19	1361.8	1481.8	1583.3	1692.7	1805.4
53	BENTON	19	1283.6	1368.5	1442.8	1525.5	1596.6
54	BLACK HAWK	19	7884.7	8465.5	8968.8	9533.4	10092.1
55	BREMER	19	1484.5	1633.7	1755.6	1865.7	1958.3
56	BUCHANAN	19	1307.5	1430.2	1550.9	1684.3	1816.5
57	CEDAR	19	904.6	931.0	959.2	989.3	1018.3
58	CHICKASAW	19	736.7	802.0	867.6	943.7	1017.4

59	CLAYTON	19	1884.9	2049.1	2191.0	2357.5	2509.3
60	CLINTON	19	4796.8	5212.1	5594.7	6014.9	6411.9
61	DAVIS	19	323.1	354.0	378.9	404.0	425.5
62	DELAWARE	19	874.1	953.7	1042.2	1134.1	1229.9
63	DES MOINES	19	3584.9	3740.5	3877.8	4058.4	4258.7
64	DUBUQUE	19	4712.9	5180.7	5641.7	6157.9	6662.6
65	FAYETTE	19	1366.3	1463.6	1544.6	1635.7	1728.8
66	HENRY	19	872.6	904.0	937.2	984.6	1032.0
67	HOWARD	19	416.1	451.1	483.1	516.6	546.9
68	IOWA	19	706.1	749.5	791.9	837.3	883.5
69	JACKSON	19	1851.7	2011.6	2168.1	2350.4	2530.0
70	JEFFERSON	19	434.9	424.3	616.1	621.4	436.2
71	JOHNSON	19	3768.4	4145.3	4495.3	4879.6	5257.6
72	JONES	19	1053.5	1131.3	1201.0	1283.6	1368.7
73	KEOKUK	19	526.2	555.5	575.9	601.4	631.4
74	LEE	19	2398.5	2449.7	2547.2	2666.8	2801.1
75	LINN	19	10778.4	11478.5	12151.1	12965.9	13773.7
76	LOUISA	19	1098.2	1172.0	1235.7	1302.7	1369.7
77	MUSCATINE	19	3037.9	3361.7	3661.3	3973.9	4255.7
78	SCOTT	19	8338.3	9179.2	9983.8	10859.7	11690.7
79	VAN BUREN	19	446.8	458.1	468.3	487.5	480.4
80	APELLO	19	2167.9	2196.2	2218.8	2278.0	2354.2
81	WASHINGTON	19	931.3	940.3	950.1	979.3	1014.1
82	WINNESHIEK	19	1098.6	1145.9	1187.9	1240.5	1299.2
83	ANOKA	27	7686.7	10258.2	13492.4	16894.0	20468.4
84	BENTON	27	1911.0	2445.0	3034.2	3633.2	4229.0
85	CARVER	27	3598.2	4635.7	5808.5	7126.6	8553.4
86	CHISAGO	27	2790.7	3953.6	5463.1	6974.8	9141.3
87	DAKOTA	27	18285.8	24507.2	32598.0	41591.1	51636.1
88	DODGE	27	741.3	894.0	1041.4	1199.1	1312.1
89	FILLMORE	27	933.2	1098.1	1259.8	1399.7	1503.7
90	GOODHUE	27	3625.7	4610.3	5664.8	6800.3	8000.9
91	HENNEPIN	27	12311.2	14950.3	17538.8	19947.9	22070.3
92	HOUSTON	27	1371.3	1647.1	1949.3	2238.7	2522.4
93	ISANTI	27	106.6	147.7	196.1	252.3	317.0
94	LE SUEUR	27	699.3	863.4	1025.3	1182.8	1336.6
95	MC LEOD	27	253.5	327.1	408.8	496.0	595.4
96	MEEKER	27	276.6	341.9	403.8	467.4	523.9
97	MOWER	27	2925.5	3538.7	4107.9	4592.1	4985.3
98	OLMSTED	27	7151.6	9200.1	11481.3	13820.6	16243.5
99	RAMSEY	27	53985.6	65245.9	76169.1	85585.5	94419.4
100	RICE	27	4142.1	5108.1	6069.6	7443.1	8110.7
101	SCOTT	27	4451.2	5815.6	7488.0	9297.0	11274.3
102	SHERBURNE	27	459.5	633.6	843.0	1104.3	1423.1
103	SIBLEY	27	1167.9	1404.7	1637.0	1861.9	2061.6
104	STEELE	27	2188.5	2716.5	3240.0	3733.0	4197.4
105	WABASHA	27	62.1	75.4	87.8	100.3	112.4
106	WASHINGTON	27	1140.5	1481.7	1938.7	2431.0	2960.8
107	WINONA	27	4320.2	5275.2	6211.7	7122.5	8063.9
108	WRIGHT	27	2516.0	3479.4	4699.6	5832.4	7454.2
109	ADAIR	29	564.9	720.0	893.5	1084.2	1302.0
110	AUDUBAIN	29	1239.4	1489.5	1765.0	1994.9	2261.1
111	BOONE	29	3106.9	3835.6	4610.1	5415.9	6299.9
112	CALLAWAY	29	1179.6	1475.4	1794.7	2132.1	2513.0
113	CLARK	29	321.2	371.9	419.4	461.3	502.7
114	FRANKLIN	29	3832.9	5233.7	6862.4	8888.3	11246.1
115	GASCONADE	29	484.7	1128.3	1405.4	1710.1	2053.0
116	JEFFERSON	29	6944.7	9596.0	12673.3	16664.6	21300.0
117	KNOX	29	93.1	106.3	118.2	128.1	137.3
118	LEWIS	29	321.2	367.0	412.3	451.7	494.7
119	LINCOLN	29	1006.2	1334.4	1700.2	2140.3	2643.8
120	MACON	29	650.1	801.0	960.9	1123.7	1308.5
121	MARION	29	1334.5	1584.4	1828.6	2059.5	2300.1
122	MONROE	29	218.7	277.1	343.9	414.7	497.5
123	MONTGOMERY	29	320.3	399.9	481.8	570.0	667.3
124	PIKE	29	933.8	1122.2	1322.3	1520.1	1722.7

125	HALLS	29	232.5	306.2	389.5	487.5	599.1
126	RANDOLPH	29	1150.2	1478.5	1842.4	2250.4	2714.3
127	ST CHARLES	29	7569.8	11150.4	15406.2	21590.8	28870.7
128	ST FRANCOI	29	1881.3	2367.8	2889.9	3455.2	4084.0
129	ST LOUIS	29	35470.9	43099.1	51030.7	58998.6	67600.5
130	STE GENEVI	29	583.9	737.4	910.3	1098.9	1310.0
131	SCHUYLER	29	114.1	148.3	183.7	227.7	274.0
132	SCOTLAND	29	92.7	110.1	127.5	144.1	161.6
133	SHELBY	29	193.8	230.3	263.2	293.6	329.1
134	WARREN	29	471.6	711.0	1002.6	1442.0	1962.2
135	WASHINGTON	29	324.0	416.2	518.4	632.9	765.3
136	ST LOUIS C	29	6773.9	7005.6	6905.4	6794.8	6482.5
137	ADAMS	55	265.8	346.2	441.8	554.0	678.2
138	BARRON	55	2233.2	2696.7	3191.9	3700.2	4195.7
139	BUFFALO	55	1446.6	1682.8	1922.3	2151.6	2397.4
140	CHIPPEWA	55	614.6	714.5	822.3	927.1	1029.9
141	CLARK	55	2211.4	2555.5	2928.1	3294.4	3617.3
142	CRAWFORD	55	1699.8	1946.7	2205.4	2451.6	2685.3
143	DUNN	55	2397.6	2755.4	3122.4	3496.1	3896.1
144	EAU CLAIRE	55	7732.9	9002.4	10316.5	11665.0	13052.4
145	GRANT	55	3884.0	4445.1	5130.2	5830.9	6529.7
146	GREEN	55	1394.4	1688.2	2009.8	2347.2	2684.4
147	IOWA	55	886.8	1019.4	1164.5	1305.5	1426.5
148	JACKSON	55	851.0	989.3	1127.6	1247.1	1374.2
149	JUNEAU	55	1925.8	2254.8	2630.4	2995.2	3353.5
150	LA CROSSE	55	8304.8	9552.1	10818.3	12077.7	13328.2
151	LAFAYETTE	55	695.1	812.8	947.9	1082.8	1199.2
152	MONROE	55	1523.0	1798.5	2090.0	2372.5	2638.8
153	PEPIN	55	671.9	766.0	875.2	966.3	1059.3
154	PIERCE	55	2174.0	2472.7	3233.2	3484.9	3662.8
155	POLK	55	1089.3	1358.5	1673.4	2007.7	2367.6
156	RICHLAND	55	903.4	990.3	1074.7	1141.7	1195.5
157	ROCK	55	9176.3	10845.1	12675.4	14549.4	16380.7
158	ST CROIX	55	3801.9	4830.3	6064.8	7435.6	8892.5
159	SAUK	55	3439.9	4001.3	4599.0	5167.2	5725.2
160	TREMPEALEA	55	1596.5	1851.2	2113.7	2391.8	2636.8
161	VERNON	55	1579.4	1821.7	2070.1	2306.2	2514.8
162	WOOD	55	6935.7	8084.2	9309.1	10531.2	11631.1

TOTAL REGISTRATIONS INTO UPPER MISSISSIPPI AREA BY YEAR AND COUNTY

1	ADAMS	140	193	240	287	347
2	BOND	4	5	6	7	8
3	BOONE	2	4	5	7	8
4	BROWN	4	6	7	8	9
5	BUREAU	23	32	41	48	54
6	CALHOUN	19	26	31	35	38
7	CARROLL	47	66	81	95	108
8	CASS	16	22	28	32	37
9	CHRISTIAN	10	14	17	19	22
10	CLINTON	4	5	6	7	8
11	DE KALB	6	10	13	17	21
12	FAYETTE	2	3	4	5	6
13	FULTON	56	77	96	116	137
14	GREENE	17	24	29	32	35
15	HANCOCK	34	47	57	67	80
16	HENDERSON	28	40	48	58	69
17	HENRY	96	138	170	202	234
18	JEFFERSON	1	2	3	3	4
19	JERSEY	22	31	38	46	52
20	JO DAVIESS	44	64	81	95	107
21	KNOX	77	107	132	157	184
22	LA SALLE	17	25	32	37	42
23	LEE	21	31	40	50	59
24	MC DONOUGH	34	53	68	83	104
25	MACOUPIN	26	37	47	55	63
26	MADISON	133	181	231	281	312
27	MARION	1	2	3	4	4
28	MARSHALL	2	3	4	5	5
29	MASON	11	14	19	24	30
30	MENARD	5	8	10	12	14
31	MERCER	46	66	83	101	120
32	MONROE	6	8	10	13	15
33	MONTGOMERY	9	13	16	18	21
34	MORGAN	20	28	35	42	48
35	OGLE	22	31	39	47	54
36	PEORIA	114	162	201	234	265
37	PERRY	1	1	2	2	2
38	PIKE	32	43	52	61	72
39	PUTNAM	2	3	4	5	6
40	RANDOLPH	4	6	7	9	10
41	ROCK ISLAN	389	560	700	833	968
42	ST CLAIR	88	122	154	180	207
43	SANGAMON	59	85	111	130	151
44	SCHUYLER	13	17	21	25	29
45	SCOTT	6	8	10	11	13
46	STARK	4	6	7	8	9
47	STEPHENSON	34	54	67	79	90
48	WARREN	29	41	50	60	70
49	WASHINGTON	1	2	3	3	3
50	WHITESIDE	139	202	253	307	355
51	WINNEBAGO	81	118	153	184	214
52	ALLAMAKEE	58	78	92	103	110
53	BENTON	15	20	23	25	26
54	BLACK HAWK	74	98	117	126	134
55	BREMER	15	21	25	27	28
56	BUCHANAN	22	29	35	39	42
57	CEDAR	34	50	57	61	63
58	CHICKASAW	12	16	19	21	23

59	CLAYTON	76	103	121	135	144
60	CLINTON	229	310	366	410	437
61	DAVIS	4	6	7	7	8
62	DELAWARE	29	40	48	55	60
63	DES MOINES	166	214	245	267	280
64	DUBUQUE	202	275	331	375	406
65	FAYETTE	36	47	55	61	64
66	HENRY	29	38	43	47	50
67	HOWARD	8	11	13	14	15
68	IOWA	8	10	12	13	14
69	JACKSON	80	109	129	146	157
70	JEFFERSON	21	26	28	30	30
71	JOHNSON	100	136	162	182	196
72	JONES	41	54	63	70	75
73	KEOKUK	7	9	10	11	12
74	LEE	92	118	134	146	153
75	LINN	296	384	447	494	524
76	LOUISA	44	59	69	75	79
77	MUSCATINE	134	184	221	249	267
78	SCOTT	470	644	772	875	942
79	VAN BUREN	12	15	17	18	18
80	WAPELLO	22	28	31	33	34
81	WASHINGTON	24	29	33	35	37
82	WINNESHIEK	41	53	61	66	69
83	ANOKA	307	511	742	968	1172
84	BENTON	24	38	52	65	76
85	CARVER	98	154	216	277	332
86	CHISAGO	85	151	229	304	399
87	DAKOTA	837	1401	2050	2724	3382
88	DODGE	23	34	44	51	57
89	FILLMORE	39	57	73	83	90
90	GOODHUE	174	272	369	461	542
91	HENNEPIN	530	816	1057	1244	1386
92	HOUSTON	72	108	141	169	191
93	ISANTI	2	4	7	9	12
94	LE SUEUR	16	24	32	38	43
95	MC LEOD	4	6	8	11	13
96	MEEKER	2	3	4	5	6
97	MOWER	67	99	127	146	159
98	OLMSTED	298	475	652	815	958
99	RAMSEY	2899	4371	5636	6598	7279
100	RICE	143	217	284	343	394
101	SCOTT	173	283	401	518	629
102	SHERBURNE	9	16	23	32	41
103	SIBLEY	19	28	37	43	48
104	STEELE	52	79	104	124	139
105	WABASHA	3	5	6	7	8
106	WASHINGTON	57	93	134	175	214
107	WINONA	233	355	460	549	622
108	WRIGHT	59	101	151	195	249
109	ADAIR	7	12	16	21	25
110	AUDUBON	25	36	47	56	63
111	BOONE	18	28	37	45	52
112	CALLAWAY	19	16	21	26	31
113	CLARK	11	17	21	24	26
114	FRANKLIN	34	57	82	111	140
115	GASCONADE	6	9	13	16	20
116	JEFFERSON	48	81	119	161	206
117	KNOX	2	3	4	4	4
118	LEWIS	11	15	19	22	24
119	LINCOLN	30	50	70	92	113
120	MACON	6	9	12	15	18
121	MARION	43	64	81	95	106
122	MONROE	4	7	10	12	15
123	MONTGOMERY	6	9	12	14	17

124	PIKE	31	47	61	73	83
125	RALLS	8	13	18	24	30
126	RANDOLPH	10	17	23	29	36
127	ST CHARLES	177	325	496	723	967
128	ST FRANCOI	5	8	11	14	17
129	ST LOUIS	482	724	944	1132	1297
130	STE GENEVI	1	2	3	4	5
131	SCHUYLER	1	2	2	3	4
132	SCOTLAND	1	2	3	4	4
133	SHELBY	5	7	9	11	12
134	WARREN	9	17	27	41	56
135	WASHINGTON	0	1	2	2	3
136	ST LOUIS C	92	117	127	130	124
137	ADAMS	1	2	3	4	5
138	BARRON	52	76	100	120	136
139	BUFFALO	71	102	124	150	167
140	CHIPPEWA	8	11	15	17	19
141	CLARK	26	38	47	55	60
142	CRAWFORD	69	98	123	143	158
143	DUNN	75	107	133	154	172
144	EAU CLAIRE	208	293	372	435	486
145	GRANT	146	212	270	319	357
146	GREEN	23	33	44	53	61
147	IOWA	22	31	40	46	51
148	JACKSON	26	37	47	55	60
149	JUNEAU	25	35	46	54	60
150	LA CROSSE	411	591	737	857	946
151	LAFAYETTE	22	32	41	49	55
152	MONROE	47	69	88	104	115
153	PEPIN	33	47	59	68	75
154	PIERCE	110	161	223	277	327
155	POLK	26	39	53	66	78
156	RICHLAND	24	35	42	46	48
157	ROCK	59	86	112	132	149
158	ST CROIX	151	239	330	421	504
159	SAUK	44	64	81	94	104
160	TREMPEALEA	66	95	119	140	154
161	VERNON	56	80	101	116	127
162	WOOD	38	54	70	81	89

TOTAL REGISTRATIONS INTO UPPER MISSISSIPPI AREA BY YEAR AND BY POOL

POOL 51	1062	1656	2225	2726	3149
POOL 52	1075	1676	2254	2763	3193
POOL 1	1054	1641	2197	2688	3100
POOL 2	1097	1711	2304	2833	3282
POOL 3	854	1326	1775	2180	2526
POOL 4	631	949	1263	1537	1772
POOL 5	448	674	881	1059	1209
POOL 5A	407	611	805	968	1108
POOL 6	338	495	641	755	849
POOL 7	369	538	694	816	916
POOL 8	313	453	577	675	753
POOL 9	272	388	485	561	619
POOL 10	285	396	486	555	606
POOL 11	345	475	579	661	722
POOL 12	402	554	676	778	858
POOL 13	400	556	683	795	889
POOL 14	460	641	781	906	1012
POOL 15	444	617	751	869	972
POOL 16	458	629	762	876	974
POOL 17	411	561	673	767	846
POOL 18	353	484	582	670	750
POOL 19	263	358	430	492	550
POOL 20	158	219	272	316	363
POOL 21	188	265	339	398	461
POOL 22	189	276	360	437	519
POOL 24	294	438	571	704	836
POOL 25	429	637	841	1047	1246
POOL 26	645	978	1289	1613	1913

FINAL OUTPUT
(Slippage Forecast)

POTENTIAL SLIP RENTAL MARKET FOR LOCK
POOLS ALONG THE MISSISSIPPI RIVER

POOL	51	.00	.00	.00	.00	.00
POOL	52	.00	.00	.00	.00	.00
POOL	1	.00	.00	.00	.00	.00
POOL	2	1574.14	2429.16	3239.49	3936.08	4516.76
POOL	3	3302.94	5103.10	6834.44	8352.90	9644.60
POOL	4	1279.72	1946.21	2581.58	3137.74	3614.39
POOL	5	11.53	17.26	22.50	26.99	30.74
POOL	5A	76.88	114.85	149.35	178.84	203.28
POOL	6	514.39	762.47	985.12	1174.99	1331.24
POOL	7	46.71	68.86	88.50	105.09	118.58
POOL	8	794.14	1169.82	1498.55	1774.35	1997.85
POOL	9	174.97	253.60	323.02	381.07	428.50
POOL	10	614.09	882.06	1114.23	1309.05	1466.70
POOL	11	184.74	261.41	325.75	379.20	422.30
POOL	12	813.01	1139.70	1410.35	1638.57	1826.54
POOL	13	167.44	234.05	287.66	333.95	373.36
POOL	14	727.41	1019.07	1250.66	1455.24	1634.26
POOL	15	312.75	436.45	534.06	619.32	691.97
POOL	16	576.17	805.22	986.33	1144.69	1283.21
POOL	17	105.77	146.38	178.10	205.14	228.25
POOL	18	91.22	125.59	152.16	175.70	197.04
POOL	19	264.42	360.60	433.67	497.37	554.90
POOL	20	62.14	86.49	106.45	124.42	142.20
POOL	21	152.17	215.15	268.73	317.74	367.20
POOL	22	72.01	102.57	129.04	153.68	178.85
POOL	24	56.39	80.67	102.10	122.27	142.81
POOL	25	72.84	107.53	139.72	172.02	204.17
POOL	26	1514.01	2260.71	[illegible]	[illegible]	4325.24

GRAVITY MODEL PROGRAM

```
      PROGRAM GRAVITY(INPUT,OUTPUT,TEMP,TEMP2,TAPE1=INPUT,TAPE3=OUTPUT,
     1TAPE7=TEMP,TAPE5=TEMP2)
      DIMENSION IDEM(162,5),ISUP(28,5),ICOUNTY(162),ISTATE(162),
     1 IYEAR(5)
      DIMENSION MARINA(28)
      DIMENSION TOTREG(162,28,5),PERCNT(30)
      DIMENSION ITAR(30,2),COOD(162),ST(30),  TLF(75)
      DIMENSION AFIN(28,5)
     1,DISP(75),FFCT(75),AINL(30),ADUT(30),AIN(30),AORG(30),ITR(30)
      DATA IYEAR/4H1980,4H1985,4H1990,4H1995,4H2000/
      DATA MARINA/2H51,2H52,2H 1,2H 2,2H 3,2H 4,2H 5,2H5A,2H 6,2H 7,
     12H 8,2H 9,2H10,2H11,2H12,2H13,2H14,2H15,2H16,2H17,2H18,2H19,2H20,
     22H21,2H22,2H24,2H25,2H26/
    1 FORMAT(2I3,1X,I1,2X,F10.8,2X,I1,5X,F2.0,9X,F2.2,28X,I1,4X,I1,
     14X,I1)
    2 FORMAT(I4,15X,I3,17X,I3,27X,I1)
    3 FORMAT(I3,F6.1,60X,I1)
    4 FORMAT(I2,F3.2,64X,I1)
    5 FORMAT(I2,F4.1,63X,I1)
    6 FORMAT(F4.1,65X,I1)
    7 FORMAT(33X,I3,8X,I3,14X,I1,6X,F7.1,F5.0)
    8 FORMAT(1H1,4X,42HRECREATION     NAME        DESIRED  COMPUTED   /
     14X,63H  AREA NO                          TRIPS    TRIPS    RATIO  DIFFERENCE -)
     INCE)
    9 FORMAT(1H 4X,I5,3X,A10,3X,4F10.2)
   11 FORMAT(45H1 MILES     FF       OD      MODEL      RATIO -)
   13 FORMAT(1H ,I5,4F10.2)
   14 FORMAT(10H  O-D ATL=,F9.1,10H  COMPATL=,F6.1, 8H RATIO =,F6.2)
   17 FORMAT(11H ERROR NO, =I4,21H  CORRECT AND RESTART)
   21 FORMAT( 6H  R = ,F4.2, 8H YBAR = ,F7.2, 8H SLOPE= ,F7.4, 8H XBAR =
     1 ,F7.2)
   23 FORMAT(I2,I6,61X,I1)
   27 FORMAT(1H ,I3,F7.2)
   29 FORMAT(10H1DIST   FF)
   31 FORMAT(10H1    TRIPS)
   33 FORMAT(1H ,I5,11F10.1)
   35 FORMAT(I2,F4.1,63X,I1)
      E=2.71828
      READ(1,1)NA,NP,IPF,AL,ICF,OK,PCER,NCD,ITRQ,ITP
      WRITE(3,101)NA,NP,IPF,AL,ICF,OK,PCER,NCD,ITRQ,ITP
  101 FORMAT(1H1,2I3,1X,I1,2X,F10.8,2X,I1,5X,F2.0,9X,F3.2,28X,I1,4X,
     2I1,4X,I1)
      IF(NCD-1)10,83,17
   83 IF(ITRQ - 4) 10,15,10
   10 IP=1
      GO TO 900
   15 CALL DEMAND(IDEM,ISUP,ICOUNTY,ISTATE,IYEAR,NP,NA,TOTREG,MARINA)
      DO 36 N1=1,5
      WRITE(3,37)
   37 FORMAT(1H1)
      REWIND 5
      ITER=0
      POTA=0.
      POTP=0.
      OK=0.
```

```
      MICD=5
      DO 90 I=1,NP
      READ (5,22) I1,(ITB(J),J=1,NA)
   22 FORMAT(I3,7X,14(2X,I3)/10X,14(2X,I3))
   60 WRITE(3,1102)I1,(ITB(J),J=1,NA)
 1102 FORMAT(1H ,I3,1X,2A(1X,I3))
      WRITE (7) ITB
   80 CONTINUE
   81 DO 90 I=1,NP
   65 98 COOD(I)=IDEM(I,N1)
      POTP=POTP + COOD(I)
   90 CONTINUE
   19 DO 100 I=1,NA
      READ(5,107)PERCNT(I),NCD
   70 107 FORMAT(3X,F7.0,59X,I1,10X)
      IF(NCD - 3) 88,108,88
   88 IR=7
      GO TO 900
  108 AORG(I)=POTP *PERCNT(I)  *.01
   75 WRITE(3,109) I,MARINA(I),PERCNT(I),NCD
  109 FORMAT(1H ,I2,3X,A10,3X,F5.2,46X,I1)
      POTA=POTA + AORG(I)
  100 CONTINUE
      DIFF=POTA - POTP
   80 113 DO 120 I=1,75
      READ(5,35)ITEN,FF,NCD
      WRITE(3,1104) ITEN,FF,NCD
 1104 FORMAT(1H ,I2,F4.1,63X,I1)
      IF(NCD-5)116,118,116
   85 116 IR=9
  118 IF(1-ITEN)110,112,110
  110 IR=10
      GO TO 900
  112 EFCT(I)=FF
   90 120 CONTINUE
      DO 140 I=1,75
      READ(5,5)ITEN,FREQ,NCD
      WRITE(3,105) ITEN,FREQ,NCD
  105 FORMAT(1H ,I2,F4.1,63X,I1)
   95 IF(NCD-6)146,148,146
  146 IR=13
      GO TO 900
  148 IF(I-ITEN)144,145,144
  144 IR=14
  100 GO TO 900
  145 TLE(I)=FREQ
  140 CONTINUE
      COUNT=0.0
      ATL=0.0
  105 REWIND 7
      DO 1106 I=1,NP
      READ (7) ITB
      DO 1106 J=1,NA
      DIST=ITB(J)
  110 COUNT=COUNT + TOTREG(I,J,N1)
```

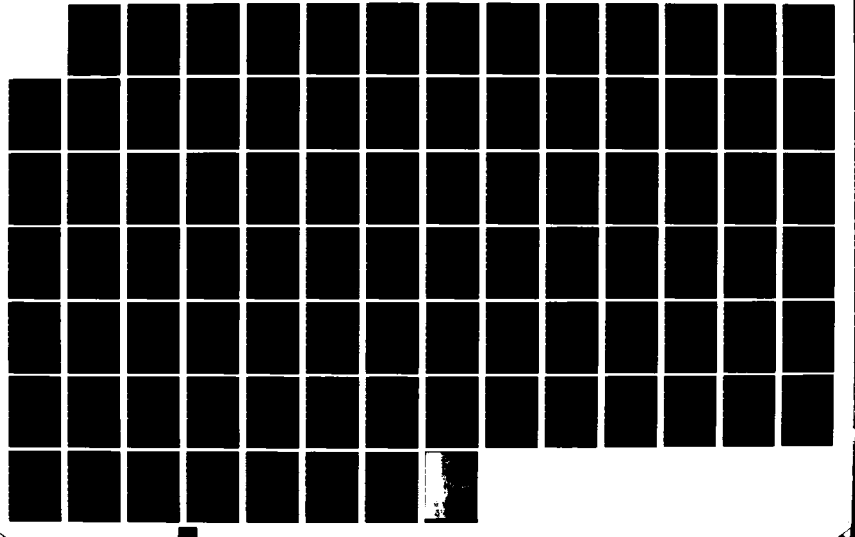
```
      ATL=ATL + DIST*TOTREG(I,J,N1)
 1106 CONTINUE
      ATL=ATL/COUNT
      WRITE(3,1107) ATL
 1107 FORMAT(1H ,29HAVFRAGE TRIP LENGTH(ATL)= ,F8.2)
  173 IF(ICF-A)124,125,124
  125 DO 127 I=1,NA
      READ(1,3)NO,TE,NCD
      WRITE(3,103)NO,TE,NCD
  103 FORMAT(1H ,I3,F6.1,60X,I1)
      IF (NCD-M) 129,131,129
  129 IR=15
      GO TO 900
  131 IF(I-NO)133,135,133
  133 IR=16
      GO TO 900
  135 AIN(I)=TE
  127 CONTINUE
  124 DO 200I=1,NA
      AINL(I)=AORG(I)
  200 AOUT(I)=AORG(I)
  123 DO 320 IJK=1,3
      ITER=ITER + 1
  210 DO 220 I=1,NA
  220 AIN(I)=(AINL(I)+AORG(I))/AOUT(I)
  222 DO 224 I=1,NA
      AOUT(I)=0.
  224 AINL(I)=AIN(I)
      DO 226 I=1,75
  226 DISP(I)=0.
      TL=0.
      TOT=0.
      REWIND 7
      IF (OK .GT. 0.0) WRITE(3,31)
      DO 308 I=1,NP
      SUM=0.
      READ(7)ITR
      DO 230 J=1,NA
      IM=(ITR(J) + 9)/10
      FF=EFCT(IM)
      SUM=SUM+FF*AIN(J)
  230 CONTINUE
      FCT=COOD(I)/SUM
      DO 300 J=1,NA
      IM=(ITR(J) + 9)/10
      TRIPS=FCT*(AIN(J)*EFCT(IM))
      ST(J)=TRIPS
      AOUT(J)=AOUT(J)+TRIPS
      DST=ITR(J)
      TL=TL+DST*TRIPS
      DISP(IM)=DISP(IM)+TRIPS
      TOT=TOT+TRIPS
      IF(OK)300,300,240
  240 IF(TRIPS-0.1)300,250,250
```

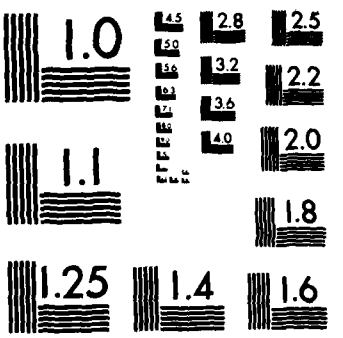
```
                  250 WRITE(3,7)I,J,ITP,TRIPS,DST
                  300 CONTINUE
                  304 CONTINUE
                      WRITE(3,8)
      170             OFF=0.
                      DO 310 I=1,NA
                      ONE=AOUT(I)/AORG(I)
                      DIFF=AOUT(I) - AORG(I)
                      WRITE(3,9) I,MARINA(I),AORG(I),AOUT(I),ONE,DIFF
      175             IF(ITER .EQ. 1) AFIN(I,N1)=AOUT(I)
                      A=(1. - ONE)
                      ONE=ABS(A)
                  310 OFF=OFF+ONE
                      IF(OFF-.22)325,325,320
      180         320 CONTINUE
                  325 IF (OK .GT. 0.0) GO TO 500
                      WRITE(3,11)
                      VAR=0.0
                      AV=0.
      185             AVSQ=0.0
                      J=0
                      DO 345 I=1,75
                      PC=(DISP(I)*100.0)/TOT
                      IF(PC) 36,330,335
      190         330 RAT=0.0
                      GO TO 348
                  335 Z=TLF(I)
                      IF(Z) 36,336,340
                  336 RAT=999999.
      195             GO TO 348
                  340 RAT=PC/TLF(I)
                      IF(RAT)348,348,350
                  350 EFCT(I)=EFCT(I)/RAT
                      AV=AV + RAT
      200             J=J + 1
                      AVSQ =AVSQ + RAT**2

                  348 WRITE(3,13)I,EFCT(I),TLF(I),PC,RAT
                  345 CONTINUE
      205             AJ = J
                      AV=AV/AJ
                  346 VAR=(AVSQ/AJ - AV**2)**.5
                      IF (ABS(VAR) .LT. 1.0) OK=1.0
                  352 CATL=TL/TOT
      210             RATIO=CATL/ATI
                      WRITE(3,14)ATL,CATL,RATIO
                      WRITE(3,1110) AV,VAR
                 1110 FORMAT(1H0,5HMEAN=,F10.5,5X,19HSTANDARD DEVIATION=,F10.5)
                      A=(1. - RATIO)
      215             A=ABS(A) - .02
                      IF(A .LT. .70) OK=1.
                      GO TO 123
                  500 CONTINUE
                   36 CONTINUE
      220             WRITE(3,50)(TYEAR(I),I=1,5)
```

```
      50 FORMAT(1H1,10X,38HPOTENTIAL SLIP RENTAL MARKET FOR LOCK    /
     1 113X,33HPOOLS ALONG THE MISSISSIPPI RIVER//19X,5(A4,6X))
         DO 55 I=1,NA
         WRITE(3,52)  MARINA(I),(AFIN(I,N1),N1=1,5)
225   52 FORMAT(6H POOL ,2X,A2,2X,5F10.2)
      55 CONTINUE
         STOP
     900 WRITE(3,17)IR
   99999 STOP
230      END
```

AD-A128 079 METHODOLOGY AND FORECASTS OF RECREATION USE AND SMALL CRAFT LOCKAGES ON T.. (U) MIDWEST RESEARCH INST KANSAS CITY MO R M MISCHON 26 JUL 78 DACW37-77-C-0075 2/2

UNCLASSIFIED F/G 13/3 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

```
      SUBROUTINE DEMAND(IDEM,ISUP,ICOUNTY,ISTATE,IYEAR,NP,NA,TOTREG,
     1 MARINA)
      INTEGER GROST
      DIMENSION ICOUNTY(162),ISTATE(162),IYEAR(5),GROST(5)
      DIMENSION IDEM(162,5),ISUP(28,5),POP(162,5),GROW(5,5),PENETR(6,5),
     1IDIST(162,28),TOTPEN(5),TOTREG(162,28,5),MARINA(28)
      DIMENSION DEM(162,5),SUP(28,5)
C
C**** INITIALIZE ARRAY
C
      DO 10 I=1,NP
      DO 10 J=1,5
   10 POP(I,J)=0.0
C
C**** READ POPULATIONS IN THOUSANDS
C
      WRITE(3,22)
   22 FORMAT(1H1,20X,39HPOPULATION DATA IN THOUSANDS OF PERSONS ,//)
      DO 29 I=1,NP
      READ(1,25) ICOUNTY(I),ISTATE(I),(POP(I,J),J=1,5)
   25 FORMAT(A10,8X,I2, 4X,5(F6.1,4X))
      WRITE(3,27) I,ICOUNTY(I),ISTATE(I),(POP(I,J),J=1,5)
   27 FORMAT(1H ,I3,2X,A10,3X,I2,5(5X,F7.1))
   29 CONTINUE
C
C**** CONVERT TO BOAT REGISTRATIONS
C
      WRITE (3,32)
   32 FORMAT(1H1,20X,38HPER THOUSAND CAPITA BOAT REGISTRATIONS ,//)
      DO 39 I=1,NP
      READ (1,35) REG
   35 FORMAT(6X,F4.1)
      DO 38 J=1,5
   38 POP(I,J)=POP(I,J)*REG
      WRITE(3,37) I,ICOUNTY(I),ISTATE(I),(POP(I,J),J=1,5)
   37 FORMAT(1H ,I3,2X,A10,3X,I2,5(5X,F7.1))
   39 CONTINUE
C
C**** CONVERT FOR GROWTH RATES
C
      WRITE(3,42)
   42 FORMAT(1H1,20X,32HAPPLY GROWTH RATES FOR EACH YEAR  ,//)
      DO 51 J1 =1,5
      READ(1,45)(GROW(J,J2),J2=1,5),GROST(J)
   51 CONTINUE
      DO 49 I=1,NP
      DO 52 K=1,5
      IF(GROST(K) .EQ. ISTATE(I)) GO TO 53
   52 CONTINUE
   53 DO 48 J=1,5
      POP(I,J)=POP(I,J)*GROW(K,J)
   45 FORMAT(6X,5(F4.2,6X),I2)
   48 CONTINUE
      WRITE(3,46) I,ICOUNTY(I),ISTATE(I),(POP(I,L),L=1,5)
   46 FORMAT(1H ,I3,2X,A10,3X,I2,5(5X,F7.1))
```

```
      49 CONTINUE
C
C**** READ PENETRATION RATES
C
      DO 59 J=1,5
      READ (1,55) IYEAR(J),(PENETR(I,J),I=1,6)
   55 FORMAT (I4,1X,6(F5.4,5X))
   59 CONTINUE
C
C**** READ DISTANCE CATEGORIES FROM EACH COUNTY TO EACH MARINA
C
      WRITE(3,62)
   62 FORMAT(1H1,20X,54HDISTRIBUTED BOAT REGISTRATIONS BY YEAR AND BY
     1MARINA)
      DO 69 I=1,NP
      READ (1,65)(IDIST(I,J),J=1,NA)
   65 FORMAT(9X,20I1)
      DO 68 J=1,5
      TOTPEN(J)=0.0
      DO 67 K=1,NA
      L=IDIST(I,K)
      TOTREG(I,K,J)=POP(I,J)*PENETR(L,J)
   67 CONTINUE
   68 CONTINUE
   69 CONTINUE
C
C**** SUM TO COMPUTE TOTAL REGISTRATIONS PROJECTED BY COUNTY AND YEAR
C
      WRITE(3,72)
   72 FORMAT(1H1,20X,67HTOTAL REGISTRATIONS INTO UPPER MISSISSIPPI AREA
     1 BY YEAR AND COUNTY.//)
     1 AND COUNTY.//)
      DO 76 I=1,NP
      DO 75 J=1,5
      DEM(I,J)=0.0
      DO 74 K=1,NA
      DEM(I,J)=DEM(I,J) + TOTREG(I,K,J)
   74 CONTINUE
   75 CONTINUE
      DO 79 J=1,5
   79 TDEM(I,J)=DEM(I,J)
      WRITE(3,78) I,ICOUNTY(I),ISTATE(I),(IDEM(I,J),J=1,5)
   78 FORMAT(1H ,I3,2X,A10,3X,A2,5(5X,I7))
   76 CONTINUE
C
C**** SUM TO COMPUTE TOTAL REGISTRATIONS PROJECTED BY MARINA AND YEAR
C
      WRITE(3,82)
   82 FORMAT(1H1,20X,67HTOTAL REGISTRATIONS INTO UPPER MISSISSIPPI AREA
     1BY YEAR AND BY POOL.//)
      DO 86 I=1,NA
      DO 85 J=1,5
      SUP(I,J)=0.0
      DO 84 K=1,NP
      SUP(I,J)=SUP(I,J) + TOTREG(K,I,J)
```

```
      84 CONTINUE
      85 CONTINUE
         DO 89 J=1,5
      89 ISUP(I,J)=SUP(I,J)
115      WRITE(3,87) MARINA(I),(ISUP(I,J),J=1,5)
      87 FORMAT(1H ,'SHPOOL ',A2,5X,5(5X,I7))
      86 CONTINUE
         RETURN
         END
```

APPENDIX E

RECREATION LOCKAGE FORECASTING MODEL AND OUTPUTS

The computer documentation and forecasts for the recreation lockage model is contained in this appendix. The methodology incorporates the coefficients derived through regression analysis and applies them to future estimates of five variables. The forecasting technique is split into two separate models. These models are described below:

1. Pleasure Boats Through the Locks: The forecasting model utilized to estimate pleasure boats through the locks contains five variables, including:

Variable	
1	Flow factor (survey data, summer 1977)
2	Potential marina slip market (gravity model output--see Appendix D)
3	Forecast of commercial lockage (provided by the St. Paul District)
4	Quality of the pools (upstream)
5	Average miles to the next lock (above and below)

The equation is as follows:

$$\text{Pleasure boats} = 7{,}601.41 - 2494.26\ (\text{Variable 1}) + 2.99\ (\text{Variable 2}) - 0.731\ (\text{Variable 3}) + 584.20\ (\text{Variable 4}) - 166\ (\text{Variable 5})$$

Variable 2 (Potential slip market) comes directly from the gravity output. However, prior to incorporating it into the forecasting model it was converted to the number of slips both above and below a lock. Conversion of the gravity output (1980) for the first five locks is shown below:

Lock	1980 Gravity Output (Appendix D)	Potential Slip Market (above and below the locks
51	0[a/]	0
52	0[a/]	0
1	0[a/]	1,574
2	1,574	4,877
3	3,303	4,583
etc.	etc.	etc.

a/ Potential marina slip market of Locks 51, 52 and 1 constrained to 0.

The forecasting model provides 5 years (1980, 1985, 1990, 1995 and 2000) and includes data for the remaining four variables described above. The variables in the forecasting equation subject to major changes during the forecast period are the potential slips per pool (above and below) and the forecast of commercial lockages. Although the data are not available, the long-distance flow factor may change. For this reason a periodic survey is recommended to improve the model validity. The model as presently conceived only incorporates flow based on the survey conducted during the summer of 1977.

The final step of the first equation is to subject the model output for each lock to a calibration factor. These factors were developed by utilizing the model with 1977 data and adjusting the outputs to correspond to 1977 actual Pleasure Boats through the locks as shown below:

Lock	1977 Pleasure Boats (Actual)	1977 Pleasure Boats (Model)	Calibration Factor
51	1,580	3,971	0.41
52	1,491	3,376	0.44
1	3,366	2,168	1.55
2	7,848	7,015	1.12
3	10,947	10,540	1.04
4	7,199	9,217	0.78
5	6,189	5,619	1.10
5A	8,114	6,571	1.23
6	6,494	6,809	0.95
etc.	etc.	etc.	etc.

The computer program is shown on the following page. The basic data for the five variables are included on 28 separate cards (one card for each pool on the Upper Mississippi River) and are shown on the page following the program.

2. Pleasure Boat Lockages: The results of the previous forecasts are output into a single table described as "Pleasure Boats Through the Locks." It provides a matrix of 28 locks by five separate forecast years. The data in this matrix are then subjected to a second equation which converts pleasure boats through the locks to the number of recreation lockages. This equation utilizes the regression coefficients described in Appendix C. The equation accomplishing this conversion is:

Lockages = pleasure boats (see equation above) x

0.3452 + 412.86

The results of this conversion are output into a second table called "Pleasure Boat Lockages." This is a matrix of 28 locks by five forecast years.

PROGRAM ONE - PLEASURE BOATS THROUGH THE LOCKS

```
LCKCST,CM50000,T10.
ACCOUNT,M350644,MICKEYM,43870.
UNIFORE.
COPYBR,INPUT,TAPE5.
REWIND,TAPE5.
LGO.
REWIND,TAPE8.
COPYSBF,TAPE8.
REWIND,TAPE8.
RENAME,TAPE5=TAPE8.
REWIND,TAPE5.
RETURN,LGO.
UNIFORE.
LGO.
RFL,10000.
COST.
EXIT.
RFL,10000.
COST.
6
      PROGRAM ADAMS(INPUT,OUTPUT,TAPE5,TAPE6=OUTPUT,TAPE8)
      DIMENSION SRMKT(5),COMML(5)
      INTEGER PBOATS(5)
    3 FORMAT("1",14X,32HPLEASURE BOATS THROUGH THE LOCKS)
      WRITE(6,3)
    4 FORMAT("0",5X,4HLOCK,6X,4H1980,5X,4H1985,5X,4H1990,5X,4H1995,5X,4H
     C2000)
 88   FORMAT(" ")
      WRITE(6,4)
      WRITE(6,88)
  1   FORMAT(A2,10(1X,F5.0),F4.2,F5.2,1X,F3.1,F5.2)
 100  READ (5,1,END=99)LOCK,SRMKT,COMML,FLOW,QUAL,AVGMI,CFACT
      DO 10 I=1,5
 10   PBOATS(I) = (7601.41 - 2494.26 * FLOW + 2.99 * SRMKT(I)
     C -0.731 * COMML(I) + 584.20 * QUAL - 166 * AVGMI) * CFACT
      WRITE(6,70)LOCK,(PBOATS(I),I=1,5)
 70   FORMAT(1X,A4,2X,5(I5,2X))
      WRITE(6,2)LOCK,(PBOATS(I),I=1,5)
 2    FORMAT(" ",5X,1X,A4,5(3X,I6))
      GOTO 100
 99   STOP
      END
```

DATA DECK LEGEND

1. Lock
2. Potential Slip Market (Gravity Model)--1980 to 2000
3. Commercial Lockages (St. Paul District)--1980 to 2000
4. Flow Factor (Survey, Summer 1977)
5. Quality of Pools (Upstream)
6. Miles to Next Lock (Above and Below)
7. Calibration Factor (1977)

DATA DECK

1	2					3					4	5	6	7
51	0	0	0	0	0	2140	2120	2310	2370	2430	97	107	3	0.40
52	0	0	0	0	0	2290	2390	2450	2550	2600	97	101	30	0.44
1	1574	2429	3239	3936	4517	2520	2620	2730	2780	2830	97	122	190	1.55
2	4877	7532	10073	12289	14162	2630	2790	2940	3110	3280	97	269	254	1.12
3	4583	7049	9416	11491	13259	2780	2910	3050	3130	3210	97	583	313	1.40
4	1292	1963	2605	3165	3645	2890	3020	3150	3240	3330	97	1101	294	0.78
5	89	132	172	206	234	3420	3550	3680	3740	3790	97	641	121	1.10
5A	591	877	1134	1354	1534	3200	3330	3450	3500	3550	97	536	121	1.23
6	561	831	1074	1280	1450	2930	3250	3380	3430	3480	97	622	130	0.95
7	846	1239	1588	1880	2117	3550	3700	3840	3900	3950	97	777	175	1.28
8	974	1424	1822	2156	2427	3160	3300	3430	3480	3530	97	948	273	0.72
9	789	1136	1437	1690	1896	3260	3380	3510	3550	3590	97	1145	321	0.91
10	799	1143	1440	1688	1889	3230	3360	3490	3540	3580	97	1069	325	1.38
11	998	1401	1736	2018	2249	3330	3440	3560	3570	3580	105	774	291	1.05
12	980	1374	1698	1973	2200	3880	4020	4170	4190	4210	105	566	303	1.00
13	894	1253	1539	1789	2007	3250	3380	3500	3520	3530	105	1058	317	1.05
14	1040	1455	1785	2074	2326	4950	5160	5340	5470	5550	105	647	198	1.73
15	889	1241	1520	1764	1975	5460	5620	5900	6010	6110	105	334	180	2.03
16	682	951	1164	1350	1511	4920	5100	5330	5420	5510	105	755	230	0.53
17	197	272	330	381	425	4660	4850	5040	5140	5230	105	602	234	0.90
18	355	487	586	673	752	5000	5210	5430	5550	5670	105	799	364	1.31
19	326	447	540	621	697	3570	3750	3930	4060	4200	105	575	336	0.71
20	214	301	375	442	509	5610	5990	6170	6390	6610	105	375	196	0.59
21	224	318	398	472	546	5780	6190	6370	6810	6850	105	681	210	0.49
22	128	184	231	276	322	5740	6050	6360	6630	6890	105	569	258	0.89
24	129	189	242	294	347	5960	6300	6630	6930	7230	105	586	299	1.60
25	1591	2369	3102	3834	4532	5970	6300	6640	6940	7240	105	629	353	1.40
26	1518	2261	2962	3662	4329	15790	17700	19600	21650	23680	105	934	385	1.37

PROGRAM TWO - PLEASURE BOAT LOCKAGES

```
      PROGRAM TWO(INPUT,OUTPUT,TAPE5,TAPE6=OUTPUT)
      INTEGER ANS(5)
      REAL PBOATS(5)
 3    FORMAT("1",19X,22HPLEASURE BOAT LOCKAGES)
      WRITE(6,3)
    4 FORMAT("0",5X,4HLOCK,6X,4H1980,5X,4H1985,5X,4H1990,5X,4H1995,5X,4H
     C2000)
      WRITE(6,4)
      WRITE(6,88)
88    FORMAT(" ")
 1    READ(5,70,END=99)LOCK,PBOATS
 70   FORMAT(1X,A4,2X,5(F5.0,2X))
      DO 10 I = 1,5
 10   ANS(I) = PBOATS(I) * .3452 + 412.86
      WRITE(6,2)LOCK,(ANS(J),J=1,5)
 2    FORMAT(" ",5X,1X,A4,5(3X,I6))
      GOTO 1
 99   STOP
      END
```

FORECASTS

PLEASURE BOATS THROUGH THE LOCKS

LOCK	1980	1985	1990	1995	2000
51	1677	1683	1627	1609	1592
52	1584	1551	1532	1500	1484
1	8687	12536	16166	19339	21975
2	17020	25780	34166	41448	47581
3	21088	31277	41042	49646	56965
4	5617	8108	9531	10786	11854
5	5152	5149	5216	5280	5331
5A	7051	7986	8823	9587	10204
6	5883	6428	7028	7578	8026
7	8640	10004	11209	12270	13130
8	4889	5784	6572	7265	7822
9	5931	6796	7528	8190	8724
10	8362	9651	10745	11718	12507
11	5484	6665	7624	8502	9220
12	3353	4428	5287	6095	6759
13	6508	7535	8341	9110	9787
14	8592	10473	11902	13283	14485
15	5303	7202	8480	9798	10930
16	2124	2485	2734	2994	3214
17	1617	1694	1725	1797	1856
18	1328	1644	1821	2047	2242
19	801	965	1069	1173	1262
20	270	260	313	336	359
21	940	931	984	934	1029
22	187	134	58	2	-44
24	-845	-956	-1088	-1190	-1288
25	4466	7385	10105	12862	15477
26	-4049	-2914	-1949	-1135	-440

PLEASURE BOAT LOCKAGES

LOCK	1980	1985	1990	1995	2000
51	991	993	974	968	962
52	959	948	941	930	925
1	3411	4740	5993	7088	7998
2	6288	9312	12206	14720	16937
3	7692	11209	14580	17550	20077
4	2697	3211	3702	4136	4504
5	2191	2204	2213	2235	2253
5A	2846	3169	3458	3722	3935
6	2443	2631	2838	3028	3183
7	3395	3866	4282	4648	4945
8	2100	2409	2681	2920	3113
9	2460	2756	3011	3240	3424
10	3299	3744	4122	4457	4730
11	2305	2713	3044	3347	3595
12	1570	1941	2237	2516	2746
13	2659	3013	3292	3557	3791
14	3378	4028	4521	4998	5413
15	2243	2898	3346	3795	4185
16	1147	1271	1356	1446	1522
17	971	997	1008	1033	1053
18	871	980	1041	1119	1186
19	689	745	781	817	848
20	506	502	520	524	536
21	737	734	752	735	748
22	477	459	432	413	397
24	121	82	37	2	-31
25	1954	2962	3901	4852	5755
26	-984	-594	-259	21	260

APPENDIX F

RECREATION USE FORECASTS
(And Other Related Data)

TABLE F-1

COUNTIES INCLUDED IN SCORP REGIONS
ALONG THE UPPER MISSISSIPPI RIVER

Minnesota

Region 7	Region 10	Region 11
Benton	Dodge	Anoka
Chisago	Fillmore	Carver
Isanti	Freeborn	Dakota
Kanabec	Goodhue	Hennepin
Meeker	Houston	Ramsey
Mille Lacs	Mower	Scott
Pine	Olmsted	Washington
Sherburne	Steele	
Stearns	Wabasha	
Wright	Winona	

Wisconsin

Region 3	Region 4	Region 12	Region 13
Grant	Crawford	Buffalo	Barron
Green	LaCrosse	Jackson	Dunn
Iowa	Monroe	Trempealeau	Pepin
LaFayette	Vernon		Pierce
Richland			Polk
Sauk			St. Croix

Iowa

Region 1	Region 2	Region 3
Allamakee	Benton	Appanoose
Black Hawk	Iowa	Davis
Bremer	Johnson	Des Moines
Buchanan	Jones	Henry
Butler	Linn	Jefferson
Cedar	Muscatine	Keokuk
Chickasaw	Scott	Lee
Clayton	Washington	Louisa
Clinton		Lucas
Delaware		Mahaska
Dubuque		Monroe
Fayette		Van Buren
Grundy		Wapello
Howard		Wayne
Jackson		
Winneshiek		

TABLE F-1 (concluded)

Illinois

Region 1A	Region 1B	Region 3A	Region 4
Boone	Bureau	Adams	Bond
Carroll	Fulton	Brown	Clinton
DeKalb	Hancock	Calhoun	Madison
Jo Daviess	Henderson	Cass	Monroe
Lee	Henry	Christian	Randolph
Ogle	Knox	Greene	St. Clair
Stephenson	LaSalle	Jersey	Washington
Whiteside	Marshall	Logan	
Winnebago	McDonough	Macoupin	
	Mercer	Mason	
	Peoria	Menard	
	Putnam	Montgomery	
	Rock Island	Morgan	
	Stark	Pike	
	Tazewell	Sangamon	
	Warren	Schuyler	
	Woodford	Scott	

Missouri

Region 4	Region 5	Region 10	Region 11
Adair	Lewis	Lincoln	Franklin
Clark	Macon	Montgomery	Jefferson
Knox	Marion	Warren	St. Charles
Schuyler	Monroe		St. Louis
Scotland	Pike		St. Louis City
	Ralls		
	Randolph		
	Shelby		

TABLE F-2

RECREATION USE OF THE UPPER MISSISSIPPI RIVER

ZONE 1

Pool	Year	Recreation Days of Use	Activity Use in Percent			
			Boating	Fishing	Swimming	Water Skiing
U & L SAF	1972	43,300	75	30	10	5
	1973	41,200	75	30	10	5
	1974	52,700	75	30	5	5
	1975	78,500	60	10	5	5
	1976	82,500	60	10	5	5
	1977	79,800	60	10	5	5
1	1972	48,600	45	30	0	0
	1973	58,800	45	30	0	0
	1974	92,500	50	40	1	0
	1975	87,500	50	40	1	0
	1976	92,100	50	40	1	0
	1977	88,400	50	40	1	0
2	1972	228,300	70	25	0	10
	1973	267,600	70	25	0	10
	1974	284,700	70	25	0	10
	1975	303,500	70	10	0	10
	1976	318,700	70	10	0	10
	1977	304,100	70	10	0	10
3	1972	492,200	65	35	0	30
	1973	506,000	65	35	0	30
	1974	533,800	50	40	5	30
	1975	515,000	50	40	5	10
	1976	530,500	60	40	5	10
	1977	509,900	60	40	5	10
Totals	1972	812,400	64	30	2	11
	1973	873,600	64	30	2	11
	1974	963,700	61	29	3	11
	1975	984,500	58	25	3	6
	1976	1,023,800	60	25	3	6
	1977	982,200	60	25	3	6

Percent of Total Increase 1972-1977 is 20.9

Source: U.S. Army, Corps of Engineers(RRMS).

TABLE F-2 (continued)

ZONE 2

Pool	Year	Recreation Days of Use	Activity Use in Percent			
			Boating	Fishing	Swimming	Water Skiing
4	1972	460,400	75	30	10	35
	1973	456,600	75	30	10	35
	1974	540,900	75	40	15	35
	1975	538,600	75	40	15	35
	1976	554,600	75	25	10	20
	1977	530,700	75	25	10	20
5	1972	63,000	70	45	7	11
	1973	61,500	70	45	7	11
	1974	174,200	70	45	5	15
	1975	181,100	70	45	5	15
	1976	190,400	50	10	5	25
	1977	186,400	50	10	5	25
5A	1972	240,400	65	30	10	15
	1973	230,200	65	30	10	15
	1974	241,200	65	40	10	10
	1975	244,300	65	40	10	10
	1976	256,700	65	40	10	10
	1977	246,700	65	40	10	10
6	1972	488,700	60	72	10	22
	1973	519,800	60	72	10	22
	1974	530,400	75	72	10	25
	1975	544,500	75	75	10	10
	1976	560,500	60	20	10	20
	1977	538,500	60	20	10	20
7	1972	308,800	20	65	8	15
	1973	319,200	20	65	8	15
	1974	311,900	70	60	10	15
	1975	316,700	70	60	10	10
	1976	333,000	60	20	15	20
	1977	321,400	60	20	15	20
8	1972	407,500	35	66	10	15
	1973	432,200	35	66	10	15
	1974	429,700	40	70	10	15
	1975	455,700	50	60	10	10
	1976	478,700	50	25	5	10
	1977	464,400	50	25	5	10
9	1972	438,600	35	67	8	15
	1973	438,100	35	67	8	15
	1974	438,700	55	70	8	15
	1975	482,800	55	60	10	10
	1976	498,200	50	20	5	5
	1977	474,400	50	20	5	5
Totals	1972	2,407,400	51	54	9	18
	1973	2,457,600	51	54	9	18
	1974	2,667,000	64	57	10	19
	1975	2,763,700	66	54	10	14
	1976	2,872,100	59	23	9	16
	1977	2,762,500	59	23	9	16

Percent of Total Increase 1972-1977is 14.8

Source: (see F-4).

TABLE F-2 (continued)

ZONE 3

Pool	Year	Recreation Days of Use	Activity Use in Percent			
			Boating	Fishing	Swimming	Water Skiing
10	1972	354,600	45	67	7	22
	1973	342,800	45	67	7	22
	1974	345,500	45	65	10	20
	1975	353,500	45	65	10	10
	1976	371,400	45	10	10	10
	1977	358,000	45	10	10	10
11	1972	335,000	15	33	11	1
	1973	445,700	15	36	10	1
	1974	521,000	15	36	12	1
	1975	640,000	55	52	30	5
	1976	642,800	30	50	2	2
	1977	1,600,700	37	36	2	2
12	1972	563,600	15	33	11	1
	1973	574,100	16	33	10	2
	1974	712,700	16	33	10	2
	1975	922,000	30	55	10	3
	1976	1,392,400	30	50	2	2
	1977	1,272,000	39	32	2	2
13	1972	1,112,000	15	33	11	1
	1973	2,646,200	15	33	11	1
	1974	2,690,300	15	33	11	1
	1975	3,215,700	25	45	12	1
	1976	3,025,600	30	50	2	2
	1977	1,413,600	31	33	1	2
Totals	1972	2,365,200	22	42	10	6
	1973	4,008,800	23	42	10	6
	1974	4,269,500	23	42	11	6
	1975	5,131,200	39	54	16	5
	1976	5,432,200	34	40	4	4
	1977	4,644,300	38	28	4	4

Percent of Total Increase 1972-1977 is 96.4.

Source: (see F-4).

TABLE F-2 (continued)

ZONE 4

Pool	Year	Recreation Days of Use	Activity Use in Percent			
			Boating	Fishing	Swimming	Water Skiing
14	1972	687,200	15	33	11	1
	1973	475,100	18	33	2	1
	1974	887,200	18	33	2	1
	1975	909,200	20	35	2	1
	1976	749,900	30	50	2	2
	1977	2,316,400	36	39	2	3
15	1972	419,400	35	51	1	13
	1973	646,500	37	52	1	14
	1974	589,500	37	52	1	14
	1975	798,600	45	60	2	20
	1976	419,000	30	50	2	2
	1977	2,102,700	41	31	1	4
16	1972	1,117,300	12	29	8	6
	1973	2,644,000	14	39	8	6
	1974	1,768,000	14	29	6	6
	1975	2,043,000	30	40	10	11
	1976	1,153,200	30	50	2	2
	1977	2,470,300	32	37	2	4
17	1972	784,800	10	33	1	1
	1973	642,500	10	38	1	2
	1974	382,600	10	38	1	2
	1975	617,200	15	38	2	3
	1976	653,400	30	50	2	2
	1977	1,159,400	30	39	2	2
18	1972	508,000	12	23	16	2
	1973	868,300	15	41	17	3
	1974	876,900	15	41	17	3
	1975	890,700	20	42	18	3
	1976	735,800	30	50	2	2
	1977	1,630,900	29	40	3	2
19	1972	196,100	12	23	16	2
	1973	2,707,600	14	28	18	3
	1974	3,059,000	14	28	18	3
	1975	3,111,000	20	30	19	4
	1976	1,855,400	30	50	2	2
	1977	2,623,300	31	36	4	4
Totals	1972	3,712,800	16	32	9	4
	1973	7,984,000	18	38	8	5
	1974	7,563,200	18	37	8	5
	1975	8,369,700	25	41	9	7
	1976	5,566,700	30	50	2	2
	1977	12,303,000	33	37	2	3

Percent of Total Increase 1972-1977 is 231.4.
Source: (see F-4).

TABLE F-2 (continued)

ZONE 5

Pool	Year	Recreation Days of Use	Activity Use in Percent			
			Boating	Fishing	Swimming	Water Skiing
20	1972	124,400	1	68	1	1
	1973	180,700	2	69	1	1
	1974	206,400	3	69	1	1
	1975	208,800	4	71	2	2
	1976	145,200	30	50	2	2
	1977	259,900	30	37	2	3
21	1972	488,100	1	68	1	1
	1973	2,069,400	5	39	1	1
	1974	4,208,700	5	39	1	1
	1975	4,239,600	20	50	2	2
	1976	2,418,100	30	50	2	2
	1977	2,177,100	33	30	3	3
22	1972	237,200	1	17	1	1
	1973	237,200	1	17	1	1
	1974	570,500	30	17	2	5
	1975	610,500	40	20	5	10
	1976	1,112,700	30	50	2	2
	1977	1,528,200	28	33	6	3
24	1972	406,800	75	30	5	15
	1973	256,400	25	30	5	1
	1974	541,700	30	32	4	3
	1975	454,600	30	32	4	3
	1976	502,400	21	35	26	9
	1977	504,019	21	35	26	9
25	1972	867,900	75	40	10	20
	1973	494,800	30	30	5	1
	1974	1,020,100	30	35	4	3
	1975	390,100	30	35	4	3
	1976	1,396,300	21	35	26	9
	1977	1,400,725	21	35	26	9
Totals	1972	2,124,400	31	45	4	8
	1973	3,238,500	13	37	3	1
	1974	6,547,400	20	38	2	3
	1975	5,903,600	25	42	3	4
	1976	5,574,700	26	44	12	5
	1977	5,869,944	27	34	13	5

Percent of Total Increase 1972-1977 is 176.3

Source: (see F-4).

TABLE F-2 (concluded)

ZONE 6

Pool	Year	Recreation Days of Use	Activity Use in Percent			
			Boating	Fishing	Swimming	Water Skiing
26	1972	2,718,900	70	30	35	25
	1973	1,548,900	50	35	10	2
	1974	3,121,100	33	36	4	3
	1975	4,059,500	33	36	4	3
	1976	3,939,200	21	35	6	9
	1977	3,951,781	21	35	26	9

Percent of Total Increase 1972-1977 is 45.3
Source: (see F-4).

TABLE F-3

POPULATION PROJECTIONS FOR APPROPRIATE AGE GROUP*
BY SCORP REGIONS AND USE ZONES ALONG THE UPPER MISSISSIPPI RIVER

SCORP REGION	1980	1985	1990	1995	2000
Zone 1					
Minnesota 7	289,600	316,500	348,000	379,500	415,400
Minnesota 11	1,827,000	1,905,700	2,003,500	2,093,300	2,161,900
Wisconsin 13	166,500	176,600	199,900	218,800	236,600
TOTAL	2,283,100	2,398,800	2,551,400	2,691,600	2,813,900
Zone 2					
Minnesota 10	332,700	344,400	357,000	370,400	378,900
Wisconsin 4	145,400	150,800	157,000	162,800	166,700
Wisconsin 12	49,700	51,500	53,700	55,800	57,300
TOTAL	527,800	546,700	567,700	589,000	602,900
Zone 3					
Iowa 1	445,400	459,100	471,400	486,900	504,600
Wisconsin 3	161,000	168,000	176,800	185,600	192,300
Illinois 1A	571,900	607,400	649,000	697,700	756,400
TOTAL	1,178,300	1,234,500	1,297,200	1,370,200	1,453,300
Zone 4					
Iowa 2	425,100	444,900	461,400	477,700	494,700
Iowa 3	216,400	215,200	214,600	215,600	217,700
Illinois 1B	979,100	1,015,100	1,054,700	1,105,800	1,179,000
TOTAL	1,620,600	1,675,200	1,730,700	1,799,100	1,891,400
Zone 5					
Missouri 4	44,900	46,500	48,000	50,000	51,900
Missouri 5	111,800	115,300	119,000	123,100	127,400
Missouri 10	43,000	49,500	56,000	65,100	74,300
Illinois 3A	532,700	545,600	571,100	592,800	636,500
TOTAL	732,400	756,900	794,100	831,000	890,100
Zone 6					
Missouri 11	1,597,100	1,625,100	1,653,200	1,719,600	1,786,300
Illinois 4	652,200	653,400	685,600	720,400	750,300
TOTAL	2,249,300	2,278,500	2,338,800	2,440,000	2,536,600

* Minnesota--6 years and over
Wisconsin--6 years and over
Iowa--12 years and over
Illinois--All age groups
Missouri--6 years and over

Source: Illinois--Bureau of the Budget (1977)
Iowa--Office for Planning and Programming (Series I-76, No. 2)
Minnesota--Office of the State Demographer, November 1975
Missouri--Office of Administration, November 10, 1976
Wisconsin--Department of Administration June 1975

TABLE F-4

POPULATION GROWTH TRENDS

State and Region	Percent Change from 1980			
	1985	1990	1995	2000
Illinois:				
All Population				
Region 1A	6.2	13.5	22.0	32.3
Region 1B	3.7	7.7	12.9	20.4
Region 3A	2.4	7.2	11.3	19.5
Region 4	0.2	5.1	10.5	15.0
Total Change	3.1	8.2	13.9	21.4
Minnesota:				
6 Years and Over				
Region 7	9.3	20.2	31.0	43.4
Region 10	3.5	7.3	11.3	13.9
Region 11	4.3	9.7	14.6	18.3
Total Change	4.8	10.6	16.1	20.7
Wisconsin:				
6 Year and Over				
Region 3	4.3	9.8	15.3	19.4
Region 4	3.7	8.0	12.0	14.6
Region 12	3.6	8.0	12.3	15.3
Region 13	6.1	20.1	31.4	42.1
Total Change	4.6	12.4	19.2	24.9
Iowa:				
12 Years and Over				
Region 1	3.1	5.8	9.3	13.3
Region 2	4.7	8.5	12.4	16.4
Region 3	-0.6	-0.8	-0.4	0.6
Total Change	3.0	5.6	8.6	12.0
Missouri:				
6 Years and Over				
Region 4	3.6	6.9	11.4	15.6
Region 5	3.1	6.4	10.1	14.0
Region 10	15.1	30.2	51.4	72.8
Region 11	1.8	3.5	7.7	11.8
Total Change	2.2	4.4	9.0	13.5

TABLE F-5

PER CAPITA PARTICIPATION RATES BY SCORP REGIONS
ALONG THE UPPER MISSISSIPPI RIVER
(Figures in Parenthesis Reflect A Base Year Rate: 1970 = 100)

Minnesota

Activity	Region 7		Region 10		Region 11	
Boating (excluding canoeing, sailing)	8.13	(9.03)	7.72	(8.58)	9.37	(10.41)
Fishing, warm/cold water	8.08	(8.33)	6.11	(6.30)	8.48	(8.74)
Swimming	20.11	(22.34)	23.93	(26.59)	26.39	(29.32)
Water Skiing	2.15	(2.69)	2.57	(3.21)	2.35	(2.94)
Canoeing	0.82	(1.02)	0.61	(0.76)	0.86	(1.08)

Source: Minnesota Outdoor Recreation Plan--1968 based on 1966-1967 data.

Wisconsin

Activity	Region 3	Region 4	Region 12	Region 13
Boating (excluding canoeing, sailing)	4.12	4.12	4.12	4.12
Fishing, fresh water (warm/cold)	6.51	6.51	6.51	6.51
Swimming	14.58	14.58	14.58	14.58
Water Skiing	1.23	1.23	1.23	1.23
Canoeing	0.38	0.38	0.38	0.38

Source: "Opportunities in the Leisure Industry," Vol. 2, Statistical Summary 1970; Rates used were for the North Central Region of the U.S.

Iowa

Activity	Region 1		Region 2		Region 3	
Boating (powerboating, water skiing, and other boating)	4.96	(4.13)	4.90	(4.08)	4.83	(4.02)
Fishing	8.09	(7.35)	7.25	(6.59)	9.13	(8.30)
Swimming, other (pools excluded)	2.45	(2.04)	4.01	(3.34)	3.56	(2.97)
Water Skiing (1970 L/R N. Central Region rate)	1.23	(same)	1.23	(same)	1.23	(same)
Canoeing, Kayak	1.10	(0.81)	0.65	(0.48)	0.61	(0.45)

Source: Statewide Summary Tables, SCORP 1975.

TABLE F-5 (concluded)

Illinois

Activity	Region 1A		Region 1B		Region 3A		Region [illegible]	
Boating (10 hp or less, greater than 10 hp)	4.86	(4.05)	3.25	(2.71)	2.51	(2.09)	5.78	(4.82)
Fishing (rate from 1970 state plan)	5.96	(same)	5.91	(same)	5.94	(same)	5.85	(same)
Swimming (beach swimming other than @ Lake Mich. no pool use)	5.35	(4.46)	3.80	(3.17)	3.25	(2.71)	5.45	(4.54)
Water Skiing (rate from 1970 State plan)	0.44	(same)	0.43	(same)	0.44	(same)	0.43	(same)
Canoeing, rivers and streams, lakes and ponds	2.05	(1.52)	1.02	(0.75)	1.42	(1.05)	0.74	(0.55)

Source: 1976 Illinois SCORP draft, June 1977.

Missouri

Activity	Region 4		Region 5		Region 10		Region 11	
Boating	3.86	(3.45)	5.06	(4.52)	3.62	(3.23)	2.12	(1.89)
Fishing (cold/warm)	15.04	(14.60)	11.49	(11.16)	5.07	(4.92)	5.05	(4.90)
Swimming, lake pool excluded	6.92	(6.18)	8.44	(7.54)	2.99	(2.67)	4.16	(3.71)
Water Skiing	2.10	(1.74)	0.92	(0.76)	1.05	(0.87)	0.58	(0.48)
Canoeing, floating	3.31	(2.74)	2.73	(2.26)	0.43	(0.36)	0.80	(0.66)

Source: 1973 Missouri SCORP Demand Update.

TABLE F-6

FORECAST OF PARTICIPATION RATES BY SCORP REGION AND USE ZONE ALONG THE UPPER MISSISSIPPI RIVER

ZONE 1

Activity	Per Capita Participation Rate				
	1980	1985	1990	1995	2000
Minnesota 7:					
Boating	12.64	14.90	17.16	19.41	21.67
Fishing	9.16	9.58	10.00	10.41	10.83
Swimming	31.28	36.86	42.45	48.03	53.62
Water Skiing	4.57	5.78	6.99	8.20	9.42
Canoeing	1.73	2.19	2.65	3.11	3.57
Minnesota 11:					
Boating	14.57	17.18	19.78	22.38	24.98
Fishing	9.61	10.05	10.49	10.92	11.36
Swimming	41.05	48.38	55.71	63.04	70.37
Water Skiing	5.00	6.32	7.64	8.97	10.29
Canoeing	1.84	2.32	2.81	3.29	3.78
Wisconsin 13:					
Boating	5.77	6.80	7.83	8.86	9.89
Fishing	7.16	7.49	7.81	8.14	8.46
Swimming	20.41	24.06	27.70	31.35	34.99
Water Skiing	2.09	2.64	3.20	3.75	4.30
Canoeing	0.65	0.82	0.99	1.16	1.33

TABLE F-6 (continued)

ZONE 2

Activity	Per Capita Participation Rate				
	1980	1985	1990	1995	2000
Minnesota 10:					
Boating	12.01	14.16	16.30	18.45	20.59
Fishing	6.93	7.24	7.56	7.88	8.19
Swimming	37.23	43.87	50.52	57.17	63.82
Water Skiing	5.46	6.90	8.35	9.79	11.24
Canoeing	1.29	1.63	1.98	2.32	2.66
Wisconsin 4:					
Boating	5.77	6.80	7.83	8.86	9.89
Fishing	7.16	7.49	7.81	8.14	8.46
Swimming	20.41	24.06	27.70	31.35	34.99
Water Skiing	2.09	2.64	3.20	3.75	4.30
Canoeing	0.65	0.82	0.99	1.16	1.33
Wisconsin 12:					
Boating	5.77	6.80	7.83	8.86	9.89
Fishing	7.16	7.49	7.81	8.14	8.46
Swimming	20.41	24.06	27.70	31.35	34.99
Water Skiing	2.09	2.64	3.20	3.75	4.30
Canoeing	0.65	0.82	0.99	1.16	1.33

TABLE F-6 (continued)

ZONE 3

Activity	Per Capita Participation Rate				
	1980	1985	1990	1995	2000
Iowa 1:					
Boating	5.78	6.81	7.85	8.88	9.91
Fishing	8.08	8.45	8.82	9.19	9.56
Swimming	2.86	3.37	3.88	4.39	4.90
Water Skiing	2.09	2.64	3.20	3.75	4.30
Canoeing	1.38	1.74	2.11	2.47	2.84
Wisconsin 3:					
Boating	5.77	6.80	7.83	8.86	9.89
Fishing	7.16	7.49	7.81	8.14	8.46
Swimming	20.41	24.06	27.70	31.35	34.99
Water Skiing	2.09	2.64	3.20	3.75	4.30
Canoeing	0.65	0.82	0.99	1.16	1.33
Illinois 1A:					
Boating	5.67	6.68	7.70	8.71	9.72
Fishing	6.56	6.85	7.15	7.45	7.75
Swimming	6.24	7.36	8.47	9.59	10.70
Water Skiing	0.75	0.95	1.14	1.34	1.54
Canoeing	2.58	3.27	3.95	4.64	5.32

TABLE F-6 (continued)

ZONE 4

Activity	Per Capita Participation Rate 1980	1985	1990	1995	2000
Iowa 2:					
Boating	5.71	6.73	7.75	8.77	9.79
Fishing	7.25	7.58	7.91	8.24	8.57
Swimming	4.68	5.51	6.35	7.18	8.02
Water Skiing	2.09	2.64	3.20	3.75	4.30
Canoeing	0.82	1.03	1.25	1.46	1.68
Iowa 3:					
Boating	5.63	6.63	7.64	8.64	9.65
Fishing	9.13	9.54	9.96	10.38	10.79
Swimming	4.16	4.90	5.64	6.39	7.13
Water Skiing	2.09	2.64	3.20	3.75	4.30
Canoeing	0.76	0.97	1.17	1.37	1.58
Illinois 1B:					
Boating	3.79	4.47	5.15	5.83	6.50
Fishing	6.50	6.80	7.09	7.39	7.68
Swimming	4.44	5.23	6.02	6.82	7.61
Water Skiing	0.73	0.92	1.12	1.31	1.50
Canoeing	1.28	1.61	1.95	2.29	2.62

TABLE F-6 (continued)

ZONE 5

Activity	Per Capita Participation Rate				
	1980	1985	1990	1995	2000
Missouri 4:					
Boating	4.83	5.69	6.56	7.42	8.28
Fishing	16.06	16.79	17.52	18.25	18.98
Swimming	8.65	10.20	11.74	13.29	14.83
Water Skiing	2.96	3.74	4.52	5.31	6.09
Canoeing	4.66	5.89	7.12	8.36	9.59
Missouri 5:					
Boating	6.33	7.46	8.59	9.72	10.85
Fishing	12.28	12.83	13.39	13.95	14.51
Swimming	10.56	12.44	14.33	16.21	18.10
Water Skiing	1.29	1.63	1.98	2.32	2.66
Canoeing	3.84	4.86	5.88	6.89	7.91
Missouri 10:					
Boating	4.52	5.33	6.14	6.94	7.75
Fishing	5.41	5.66	5.90	6.15	6.40
Swimming	3.74	4.41	5.07	5.74	6.41
Water Skiing	1.48	1.87	2.26	2.65	3.04
Canoeing	0.61	0.77	0.94	1.10	1.26
Illinois 3A:					
Boating	2.93	3.45	3.97	4.49	5.01
Fishing	6.53	6.83	7.13	7.42	7.72
Swimming	3.79	4.47	5.15	5.83	6.50
Water Skiing	0.75	0.95	1.14	1.34	1.54
Canoeing	1.78	2.26	2.73	3.20	3.68

TABLE F-6 (concluded)

ZONE 6

Activity	Per Capita Participation Rate				
	1980	1985	1990	1995	2000
Missouri 11:					
Boating	2.65	3.12	3.59	4.06	4.54
Fishing	5.39	5.64	5.88	6.12	6.37
Swimming	5.19	6.12	7.05	7.98	8.90
Water Skiing	0.82	1.03	1.25	1.46	1.68
Canoeing	1.12	1.42	1.72	2.01	2.31
Illinois 4:					
Boating	6.75	7.95	9.16	10.36	11.57
Fishing	6.44	6.73	7.02	7.31	7.60
Swimming	6.36	7.49	8.63	9.76	10.90
Water Skiing	0.73	0.92	1.12	1.31	1.50
Canoeing	0.94	1.18	1.43	1.68	1.92

TABLE F-7

FORECAST OF RECREATION DAYS BY SCORP REGION
AND USE ZONE ALONG THE UPPER MISSISSIPPI RIVER

ZONE 1

Activity	Recreation Days				
	1980	1985	1990	1995	2000
Minnesota 7:					
Boating	3,660,500	4,715,800	5,971,700	7,366,100	9,001,700
Fishing	2,652,700	3,032,100	3,480,000	3,950,600	4,498,800
Swimming	9,058,700	11,666,200	14,772,600	18,227,400	22,273,700
Water Skiing	1,323,500	1,829,400	2,432,500	3,111,900	3,913,100
Canoeing	501,000	693,100	922,200	1,180,200	1,483,000
Minnesota 11:					
Boating	26,619,400	32,739,900	39,629,200	46,848,100	54,004,300
Fishing	17,557,500	19,152,300	21,016,700	22,858,800	24,559,200
Swimming	74,998,400	92,197,800	111,615,000	131,961,600	152,132,900
Water Skiing	9,135,000	12,044,000	15,306,700	18,776,900	22,246,000
Canoeing	3,361,700	4,421,200	5,629,800	6,887,000	8,172,000
Wisconsin 13:					
Boating	960,700	1,200,900	1,565,200	1,938,600	2,340,000
Fishing	1,192,100	1,322,700	1,561,200	1,781,000	2,001,600
Swimming	3,398,300	4,249,000	5,537,200	6,859,400	8,278,600
Water Skiing	348,000	466,200	639,700	820,500	1,017,400
Canoeing	108,200	144,800	197,900	253,800	314,700
Zone 1 Totals:					
Boating	31,240,600	38,656,600	47,166,100	56,152,800	65,346,000
Fishing	21,402,300	23,507,100	26,057,900	28,590,400	31,059,600
Swimming	87,455,400	108,113,000	131,924,800	157,048,400	182,685,200
Water Skiing	10,806,500	14,339,600	18,378,900	22,709,300	27,176,500
Canoeing	3,970,900	5,259,100	6,749,900	8,321,000	9,969,700

TABLE F-7 (continued)

ZONE 2

Activity	Recreation Days 1980	1985	1990	1995	2000
Minnesota 10:					
Boating	3,995,700	4,876,700	5,819,100	6,833,900	7,801,600
Fishing	2,305,600	2,493,500	2,698,900	2,918,800	3,103,200
Swimming	12,386,400	15,108,800	18,035,600	21,183,200	24,181,400
Water Skiing	1,816,500	2,376,400	2,981,000	3,626,200	4,258,300
Canoeing	429,200	561,400	706,900	859,300	1,007,900
Wisconsin 4:					
Boating	839,000	1,025,400	1,229,300	1,442,400	1,648,700
Fishing	1,041,100	1,129,500	1,226,200	1,325,200	1,410,300
Swimming	2,967,600	3,628,200	4,348,900	5,103,800	5,832,800
Water Skiing	303,900	398,100	502,400	610,500	716,800
Canoeing	94,500	123,700	155,400	188,800	221,700
Wisconsin 12:					
Boating	286,800	350,200	420,500	494,400	566,700
Fishing	355,900	385,700	419,400	454,200	484,800
Swimming	1,014,400	1,239,100	1,487,500	1,749,300	2,004,900
Water Skiing	103,900	136,000	171,800	209,200	246,400
Canoeing	32,300	42,200	53,200	64,700	76,200
Zone 2 Totals:					
Boating	5,121,500	6,252,300	7,468,900	8,770,700	10,017,000
Fishing	3,702,600	4,008,700	4,344,500	4,698,200	4,998,300
Swimming	16,368,400	19,976,100	23,872,000	28,036,300	32,019,100
Water Skiing	2,224,300	2,910,500	3,655,200	4,445,900	5,222,000
Canoeing	556,000	727,300	915,500	1,112,800	1,305,800

TABLE F-7 (continued)

ZONE 3

Activity	Recreation Days 1980	1985	1990	1995	2000
Iowa 1:					
Boating	2,574,400	3,126,500	3,700,500	4,323,700	5,000,600
Fishing	3,598,800	3,879,400	4,157,700	4,474,500	4,824,000
Swimming	1,273,800	1,547,200	1,829,000	2,137,500	2,472,500
Water Skiing	930,900	1,212,000	1,508,500	1,825,900	2,169,300
Canoeing	614,700	798,800	994,700	1,202,600	1,433,100
Wisconsin 3:					
Boating	929,000	1,142,400	1,384,300	1,644,400	1,901,800
Fishing	1,152,800	1,258,300	1,380,800	1,510,800	1,626,900
Swimming	3,286,000	4,042,100	4,897,400	5,818,600	6,728,600
Water Skiing	336,500	443,500	565,800	696,000	826,900
Canoeing	104,600	137,800	175,000	215,300	255,800
Illinois 1A:					
Boating	3,242,700	4,057,400	4,997,300	6,077,000	7,352,200
Fishing	3,751,700	4,160,700	4,640,400	5,197,900	5,862,100
Swimming	3,568,700	4,470,500	5,497,000	6,690,900	8,093,500
Water Skiing	428,900	577,000	739,900	934,900	1,164,900
Canoeing	1,475,500	1,986,200	2,563,600	3,237,300	4,024,000
Zone 3 Totals:					
Boating	6,746,100	8,326,300	10,082,100	12,045,100	14,254,600
Fishing	8,503,300	9,298,400	10,178,900	11,183,300	12,313,000
Swimming	8,128,500	10,059,800	12,223,400	14,647,000	17,294,600
Water Skiing	1,696,300	2,232,500	2,814,200	3,456,800	4,161,600
Canoeing	2,194,800	2,922,800	3,733,300	4,655,200	5,712,900

TABLE F-7 (continued)

ZONE 4

Activity	Recreation Days 1980	1985	1990	1995	2000
Iowa 2:					
Boating	2,427,300	2,994,200	3,575,800	4,139,400	4,843,100
Fishing	3,082,000	3,372,300	3,649,700	3,936,200	4,239,600
Swimming	1,989,500	2,451,400	2,929,900	3,429,900	3,967,500
Water Skiing	888,500	1,174,500	1,476,500	1,791,400	2,127,200
Canoeing	348,600	458,200	576,800	697,400	831,100
Iowa 3:					
Boating	1,218,300	1,426,800	1,639,500	1,862,800	2,100,800
Fishing	1,975,700	2,053,000	2,137,400	2,237,900	2,349,000
Swimming	900,200	1,054,500	1,210,300	1,377,700	1,552,200
Water Skiing	452,300	568,100	686,700	808,500	936,100
Canoeing	164,500	208,700	251,100	295,400	344,000
Illinois 1B:					
Boating	3,710,800	4,537,500	5,431,700	6,446,800	7,663,500
Fishing	6,364,200	6,902,700	7,477,800	8,171,900	9,054,700
Swimming	4,347,200	5,309,000	6,349,300	7,541,600	8,972,200
Water Skiing	714,700	933,900	1,181,300	1,448,600	1,768,500
Canoeing	1,253,200	1,634,300	2,056,700	2,532,300	3,089,000
Zone 4 Totals:					
Boating	7,356,400	8,958,500	10,647,000	12,499,000	14,607,400
Fishing	11,421,900	12,328,000	13,264,900	14,346,000	15,643,300
Swimming	7,236,900	8,814,900	10,489,500	12,349,200	14,491,900
Water Skiing	2,055,500	2,676,500	3,344,500	4,048,500	4,831,800
Canoeing	1,766,300	2,301,200	2,884,600	3,525,100	4,264,100

TABLE F-7 (continued)

ZONE 5

Activity	Recreation Days 1980	1985	1990	1995	2000
Missouri 4:					
Boating	216,900	264,600	314,900	371,000	429,700
Fishing	721,100	780,700	841,000	912,500	985,100
Swimming	388,400	474,300	563,500	664,500	769,700
Water Skiing	132,900	173,900	217,000	265,500	316,100
Canoeing	209,200	273,900	341,800	418,000	497,700
Missouri 5:					
Boating	707,700	860,100	1,022,200	1,196,500	1,382,300
Fishing	1,372,900	1,479,300	1,593,400	1,717,200	1,848,600
Swimming	1,180,600	1,434,300	1,705,300	1,995,500	2,305,900
Water Skiing	144,200	187,900	235,600	285,600	338,900
Canoeing	429,300	560,400	699,700	848,200	1,007,700
Missouri 10:					
Boating	194,400	263,800	343,800	451,800	575,800
Fishing	232,600	280,200	330,400	400,400	475,500
Swimming	160,800	218,300	283,900	373,700	476,300
Water Skiing	63,600	92,600	126,600	172,500	225,900
Canoeing	26,200	38,100	52,600	71,600	93,600
Illinois 3A:					
Boating	1,560,800	1,882,300	2,267,300	2,661,700	3,188,900
Fishing	3,478,500	3,726,400	4,071,900	4,398,600	4,913,300
Swimming	2,018,900	2,438,800	2,941,200	3,456,000	4,137,200
Water Skiing	399,500	518,300	651,100	794,400	980,200
Canoeing	948,200	1,233,100	1,559,100	1,897,000	2,342,300
Zone 5 Totals:					
Boating	2,679,800	3,270,800	3,948,200	4,681,000	5,576,700
Fishing	5,805,100	6,266,600	6,836,700	7,428,700	8,223,000
Swimming	3,748,700	4,565,700	5,493,900	6,489,700	7,689,100
Water Skiing	740,200	972,700	1,230,300	1,518,000	1,861,100
Canoeing	1,612,900	2,105,500	2,653,200	3,234,800	3,941,300

TABLE F-7 (concluded)

ZONE 6

Activity	Recreation Days				
	1980	1985	1990	1995	2000
Missouri 11:					
Boating	4,232,300	5,070,300	5,935,000	6,981,600	8,109,300
Fishing	8,608,400	9,165,600	9,720,800	10,523,900	11,378,700
Swimming	8,288,900	9,945,600	11,655,100	13,722,400	15,898,100
Water Skiing	1,309,600	1,673,900	2,066,500	2,510,600	3,001,000
Canoeing	1,788,800	2,307,600	2,843,500	3,456,400	4,126,400
Illinois 4:					
Boating	4,402,400	5,194,500	6,280,100	7,463,300	8,681,300
Fishing	4,200,200	4,397,400	4,812,900	5,266,100	5,702,300
Swimming	4,148,000	4,894,000	5,916,700	7,031,100	8,178,300
Water Skiing	476,100	601,100	767,900	943,700	1,125,400
Canoeing	613,100	771,000	980,400	1,210,300	1,440,600
Zone 6 Totals:					
Boating	8,634,700	10,264,800	12,215,100	14,444,900	16,790,300
Fishing	12,808,600	13,563,000	14,533,700	15,790,000	17,081,300
Swimming	12,436,900	14,839,600	17,571,800	20,753,500	24,076,400
Water Skiing	1,785,700	2,275,000	2,834,400	3,454,300	4,126,400
Canoeing	2,401,900	3,078,600	3,823,900	4,666,700	5,567,000

APPENDIX G

SIMILAR PROJECT ANALYSIS OF RECREATION
USE ON UPPER MISSISSIPPI RIVER
(Program and Outputs)

METHODOLOGY

MRI modified the Corps similar "project concept," utilizing per capita use rates from the GREAT Recreation Demand Analysis, June 1976. First the per capita use rates for the 13 pools under the jurisdiction of the St. Paul District were analyzed and classified into three types of pools (urban river pools, rural river pools and lakes). The basis for this classification was primarily the resources in the pool and the type of per capita use rates generated at the 13 pools. Further classification would have resulted in little distinction between the classes because the per capita use rates varied little. Four pools were classified as urban river pools (including the Upper and Lower St. Anthony Falls, Pool 1 and Pool 2). Seven pools were classified as rural river pools (pools 3, 5, 5A, 6, 7, 8 and 10). The lake classification included two pools, 4 and 9 (see Table G-1).

These rates were assumed to be characteristic of all pools along the Upper Mississippi River. After discussion with the St. Paul District, it was concluded that pools 11 through 26 would all fall into the rural river classification. Thus, the appropriate per capita rates were utilized for these pools.

Using the same primary market area already identified in another part of this report and the distance matrix (distance between origin and destination areas) from the gravity model, the population for the three zones for 5 forecast years and each of the 28 pools were calculated by computer techniques (see the following computer program). The next step was to apply the appropriate activity per capita use rates to each of the population zones for the 5 forecast years to estimate total recration activity in the seven activities for the 28 pools.

An internal computer subroutine provided for growth in the activity participation rates for each of the forecast years. These growth data were taken directly from MRI's COMPATRAX recreation participation allocation model. The total activity days are each pool were then converted to the number of visitor-days, using conversion factors developed from the GREAT I data. Another computer calculation provided an estimate of visitation from beyond the 75 mile zone. This factor was developed from the GREAT demand study. A final calculation aggregated the visitation data into the 28 pools for the 5 forecast years.

The computer program, various summary tables, coefficients and final outputs are located on the pages that follow.

TABLE G-1

CLASSIFICATION OF UPPER MISSISSIPPI RIVER POOLS
FOR SIMILAR PROJECT ANALYSIS

Pool	Pool[a/] Class	Output Number
USAF	1	1
LSAF	1	2
1	1	3
2	1	4
3	3	5
4	2	6
5	3	7
5A	3	8
6	3	9
7	3	10
8	3	11
9	2	12
10	3	13
11	3	14
12	3	15
13	3	16
14	3	17
15	3	18
16	3	19
17	3	20
18	3	21
19	3	22
20	3	23
21	3	24
22	3	25
24	3	26
25	3	27
26	3	28

a/

Pool Class	Code
River, Urban	1
Lake	2
River, Rural	3

COMPUTERIZED SIMILAR PROJECTS PROGRAM

```
      PROGRAM RECREA(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT)
C
C**** SET UP DIMENSIONS, ARRAYS, ETC.
C
      DIMENSION POP(162,5),RATES(3,3,7),ACTIVTY(28,7,5),GROWTH(7,5)
      DIMENSION POOLPOP(28,5,3),ICOUNTY(162),ISTATE(162),CONVERT(3),
     1ITYPE(28)
      DIMENSION EXPAND(3),TOTAL(28,5)
      INTEGER DIST(162,28)
C
C**** INITIALIZE ARRAYS
C
      DO 10 I=1,28
      DO 10 J=1,5
      DO 10 K=1,3
   10 POOLPOP(I,J,K)=0.0
      DO 12 I=1,28
      DO 12 J=1,7
      DO 12 K=1,5
   12 ACTIVTY(I,J,K)=0.0
      DO 14 I=1,28
      DO 14 J=1,5
   14 TOTAL(I,J)=0.0
C
C**** READ IN POPULATIONS(THOUSANDS)
C
      WRITE(6,22)
   22 FORMAT(1H1,20X,30HPOPULATION DATA IN THOUSANDS OF PERSONS,//)
      DO 29 I=1,162
      READ(5,25)ICOUNTY(I),ISTATE(I),(POP(I,J),J=1,5)
   25 FORMAT(A10,8X,I2,4X,5(F6.1,4X))
      WRITE(6,27)I,ICOUNTY(I),ISTATE(I),(POP(I,J),J=1,5)
   27 FORMAT(1H ,I3,2X,A10,3X,I2,5(5X,F7.1))
   29 CONTINUE
C
C**** READ IN DISTANCES FROM POPULATIONS TO POOLS
C
      WRITE(6,33)
      DO 30 I=1,162
      READ(5,31)(DIST(I,J),J=1,28)
   31 FORMAT(10X,14(2X,I3)/10X,14(2X,I3))
      WRITE(6,32)I,(DIST(I,J),J=1,28)
   32 FORMAT(1H ,I4,4X,28(1X,I3))
   33 FORMAT(1H1,32HDISTANCES FROM COUNTIES TO POOLS)
   30 CONTINUE
C
C**** DETERMINE WHETHER OR NOT POOL RECEIVES ANY POPULATION FROM COUNTY
C     IF SO, ADD POPULATION TO CORRECT DISTANCE BAND
C
      DO 40 I=1,162
      DO 40 J=1,28
      IF(DIST(I,J) .GT. 25) GO TO 34
      DO 35 K=1,5
      POOLPOP(J,K,1)=POOLPOP(J,K,1) + POP(I,K)
   35 CONTINUE
```

```
                GO TO 40
             34 IF(DIST(I,J) .GT. 50) GO TO 37
                DO 36 K=1,5
                POOLPOP(J,K,2)=POOLPOP(J,K,2) + POP(I,K)
             36 CONTINUE
                GO TO 40
             37 IF(DIST(I,J) .GT. 75) GO TO 40
                DO 39 K=1,5
                POOLPOP(J,K,3)=POOLPOP(J,K,3) + POP(I,K)
             39 CONTINUE
             40 CONTINUE
C
C**** PRINT TABLE OF POPULATIONS(POOL X ZONE X YEAR)
C
             DO 45 J=1,5
             WRITE(6,41)
          41 FORMAT(1H1,44HALLOCATED POPULATION BY POOL, ZONE, AND YEAR)
             WRITE(6,42) J
          42 FORMAT(1H0,4HYEAR,I3,/)
             DO 44 I=1,28
             WRITE(6,43)I,(POOLPOP(I,J,K),K=1,3)
          43 FORMAT(1H ,6HPOOL  ,I3,6X,3(F12.1,6X))
          44 CONTINUE
          45 CONTINUE
C
C**** READ IN POOL TYPE
C
             READ(5,51)ITYPE
          51 FORMAT(28(I1,1X))
C
C**** APPLY ACTIVITY RATES TO EACH DISTANCE ZONE POPULATION
C       (DEPENDING ON TYPE OF POOL)
C---- FIRST READ IN ACTIVITY RATES
C
             DO 55 I=1,3
             DO 55 J=1,3
             READ(5,54)(RATES(I,J,K),K=1,7)
          54 FORMAT(7(F5.0,5X))
          55 CONTINUE
C
C---- THEN COMPUTE  ACTIVITY LEVELS
C
             DO 60 I=1,28
             L=ITYPE(I)
             DO 60 J=1,7
             DO 58 K=1,5
             DO 58 M=1,3
             ACTIVTY(I,J,K)=ACTIVTY(I,J,K) + RATES(L,M,J)*POOLPOP(I,K,M)
          58 CONTINUE
          60 CONTINUE
C
C---- PRINT ACTIVITIES BY POOL BY YEAR
C
             DO 70 I=1,5
             WRITE(6,61) I
```

```
      61 FORMAT(1H1,51HRECREATIONAL ACTIVITIES -- POOLS BY ACTIVITY BY YEAR,
     1 //,5H YEAR,I3)
         DO 68 J=1,28
         WRITE(6,62) J,(ACTIVTY(J,K,I),K=1,7)
  115    62 FORMAT(1H0,4HPOOL,I3,7(3X,F10.2))
      68 CONTINUE
      70 CONTINUE
C
C**** APPLY GROWTH FACTORS
C
  120    DO 75 I=1,7
         READ(5,71)(GROWTH(I,J),J=1,5)
      71 FORMAT(5(F5.2,5X))
      75 CONTINUE
  125    DO 77 I=1,7
         DO 77 J=1,5
         X=GROWTH(I,J)
         DO 76 K=1,28
         ACTIVTY(K,I,J)=ACTIVTY(K,I,J)*X
  130    76 CONTINUE
      77 CONTINUE
         DO 80 I=1,5
         WRITE(6,78) I
      78 FORMAT(1H1,51HGROWTH RATES APPLIED TO POOLS BY ACTIVITIES BY YEAR,
  135    1//,5H YEAR,I3)
         DO 79 J=1,28
         WRITE(6,81) J,(ACTIVTY(J,K,I),K=1,7)
      81 FORMAT(1H0,4HPOOL,I3,7(3X,F10.2))
      79 CONTINUE
  140    80 CONTINUE
C
C**** APPLY CONVERSION FACTORS
C
         READ(5,82)(CONVERT(I),I=1,3)
  145    82 FORMAT(3(F5.0,5X))
         DO 85 I=1,28
         L=ITYPE(I)
         DO 84 J=1,7
         DO 84 K=1,5
  150    ACTIVTY(I,J,K)=ACTIVTY(I,J,K)*CONVERT(L)
      84 CONTINUE
      85 CONTINUE
         DO 90 K=1,5
         WRITE(6,86) K
  155    86 FORMAT(1H1,63HCONVERSION RATES TO VISITOR DA S BY POOLS BY ACTIVIT
     1IES BY YEAR,//,5H YEAR,I3)
         DO 89 I=1,28
         WRITE(6,87) I,(ACTIVTY(I,J,K),J=1,7)
      87 FORMAT(1H ,4HPOOL,I3,7(3X,F10.2))
  160    89 CONTINUE
      90 CONTINUE
C
C**** APPLY EXPANSION FACTOR
C
  165    READ(5,92)(EXPAND(I),I=1,3)
```

```
      92 FORMAT(31E5.0,5X))
         DO 95 I=1,28
         L=ITYPE(I)
         DO 94 J=1,7
         DO 94 K=1,5
         ACTIVITY(I,J,K)=ACTIVITY(I,J,K)*EXPAND(L)
      94 CONTINUE
      95 CONTINUE
         DO 100 K=1,5
         WRITE(6,96) K
      96 FORMAT(1H1,74HEXPANDED VISITOR DAYS FOR MORE DISTANT ORIGINS BY PO
        1OL BY ACTIVITY BY YEAR,/5H YEAR,I3)
         DO 99 I=1,28
         WRITE(6,97)I,(ACTIVITY(I,J,K),J=1,7)
      97 FORMAT(1H0,4HPOOL,I3,7(3X,F10.2))
      99 CONTINUE
     100 CONTINUE
C
C**** COMBINE AND PRINT TABLE FOR ALL VISITS BY POOL BY YEAR
C
         DO 120 I=1,28
         DO 120 K=1,5
         DO 120 J=1,7
         TOTAL(I,K)=TOTAL(I,K) + ACTIVITY(I,J,K)
     120 CONTINUE
         WRITE(6,130)
     130 FORMAT(1H1,20X,12HTOTAL VISITS,//,20X, 64H1980           1985
        1      1990          1995          2000,/20X,64H----          --
        2--          ----          ----          ----,/)
         DO 140 I=1,28
         WRITE(6,135)I,(TOTAL(I,J),J=1,5)
     135 FORMAT(1H0,4HPOOL,I3,5X,5(F12.2,3X))
     140 CONTINUE
         STOP
         END
```

POPULATION DATA (1980, 1985, 1990, 1995, 2000)
AND
GRAVITY MODEL DISTANCE MATRIX

POPULATION DATA IN THOUSANDS OF PERSONS

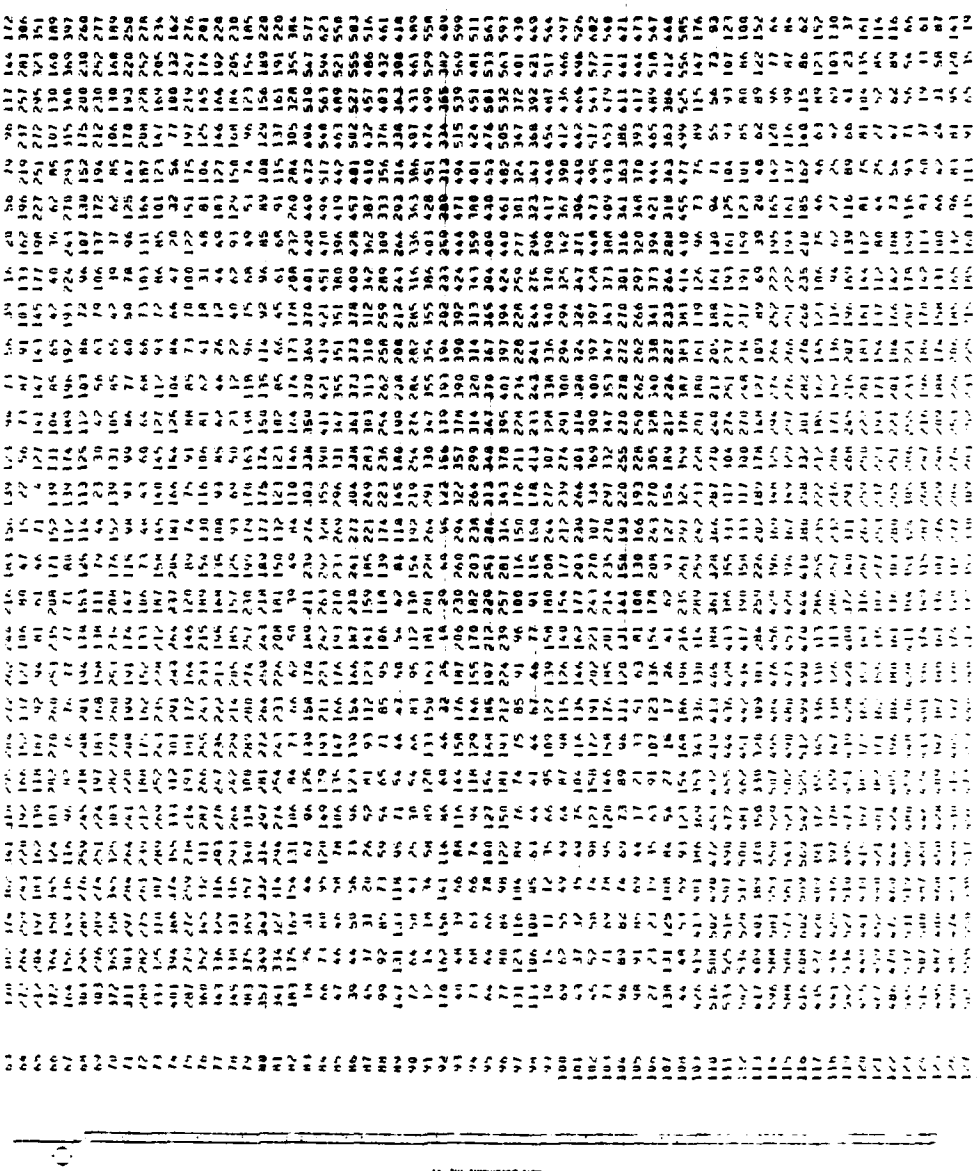
1	ADAMS	17	67.1	66.9	69.2	72.9	81.5
2	BOND	17	15.6	15.7	15.9	16.5	16.8
3	BOONE	17	26.1	28.8	31.6	34.7	38.0
4	BROWN	17	5.1	5.0	4.8	4.8	5.2
5	BUREAU	17	37.4	38.2	39.7	41.5	43.0
6	CALHOUN	17	5.4	5.4	5.3	5.3	5.3
7	CARROLL	17	19.4	19.7	20.1	20.9	22.0
8	CASS	17	13.5	13.9	14.4	14.8	15.6
9	CHRISTIAN	17	36.5	37.0	37.8	38.3	39.9
10	CLINTON	17	30.2	30.6	31.3	31.6	31.9
11	DE KALB	17	69.1	75.5	83.6	93.6	106.6
12	FAYETTE	17	20.5	21.5	22.7	23.3	23.6
13	FULTON	17	42.5	42.9	44.4	47.5	51.7
14	GREENE	17	16.2	16.0	16.1	16.0	16.0
15	HANCOCK	17	21.3	21.3	21.6	22.2	24.4
16	HENDERSON	17	8.7	8.9	9.0	9.5	10.6
17	HENRY	17	57.0	59.3	61.0	63.8	68.2
18	JEFFERSON	17	33.9	34.5	35.9	37.1	39.6
19	JERSEY	17	19.9	20.2	20.8	21.9	23.0
20	JO DAVIESS	17	21.5	22.3	23.2	24.0	25.1
21	KNOX	17	63.3	65.2	66.8	70.6	76.4
22	LA SALLE	17	107.5	110.8	116.0	121.8	126.4
23	LEE	17	34.6	38.0	41.4	45.1	49.1
24	MC DONOUGH	17	40.3	45.3	48.5	52.0	60.4
25	MACOUPIN	17	46.0	47.7	50.3	52.1	55.2
26	MADISON	17	251.3	258.3	265.3	285.7	293.1
27	MARION	17	39.4	42.1	43.8	45.2	45.6
28	MARSHALL	17	13.1	13.3	13.5	13.7	13.7
29	MASON	17	17.0	16.8	17.7	20.0	22.9
30	MENARD	17	10.7	11.0	11.6	12.0	12.8
31	MERCER	17	18.3	19.1	19.9	21.3	23.4
32	MONROE	17	20.9	21.3	21.4	23.9	25.2
33	MONTGOMERY	17	30.7	31.1	31.9	32.4	33.9
34	MORGAN	17	34.4	35.6	37.6	39.0	41.6
35	OGLE	17	43.4	45.4	47.7	50.7	54.2
36	PEORIA	17	204.8	212.0	219.4	227.2	237.5
37	PERRY	17	19.6	19.5	20.1	20.4	20.9
38	PIKE	17	18.3	18.0	18.1	18.5	20.2
39	PUTNAM	17	6.0	6.0	6.6	7.2	7.6
40	RANDOLPH	17	32.9	33.6	34.9	36.6	38.4
41	ROCK ISLAN	17	169.6	176.4	183.4	192.3	204.3
42	ST CLAIR	17	286.2	286.6	301.2	310.4	328.9
43	SANGAMON	17	170.1	178.9	192.4	201.9	217.2
44	SCHUYLER	17	7.3	7.2	7.2	7.4	8.1
45	SCOTT	17	5.6	5.5	5.5	5.4	5.6
46	STARK	17	7.3	7.5	7.6	7.3	7.4
47	STEPHENSON	17	48.2	47.9	49.8	52.0	54.5
48	WARREN	17	22.7	23.4	23.8	25.0	26.9
49	WASHINGTON	17	15.1	15.3	15.6	15.7	16.0
50	WHITESIDE	17	66.	69.8	73.0	78.2	85.8
51	WINNEBAGO	17	243.1	260.0	278.6	298.5	321.1
52	ALLAMAKEE	19	15.7	16.3	16.8	17.2	17.6
53	HENTON	19	23.2	23.6	24.0	24.3	24.6
54	BLACK HAWK	19	138.6	142.0	145.1	147.7	150.0
55	BREMER	19	26.0	27.3	28.3	28.8	29.0
56	BUCHANAN	19	22.9	23.9	25.0	26.0	26.9
57	CEDAR	19	16.6	16.3	16.2	16.0	15.8
58	CHICKASAW	19	15.5	16.1	16.8	17.5	18.1
59	CLAYTON	19	21.5	22.3	23.0	23.7	24.2
60	CLINTON	19	59.9	62.1	64.3	66.2	67.7

61	DAVIS	19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
62	DELAWARE	19	19.5	20.3	21.4	22.1	23.2
63	DES MOINES	19	45.0	44.8	44.8	44.9	45.2
64	DUBUQUE	19	98.3	103.1	108.3	113.2	117.5
65	FAYETTE	19	27.2	27.8	28.3	28.7	29.1
66	HENRY	19	17.3	17.1	17.1	17.2	17.3
67	HOWARD	19	11.7	12.1	12.5	12.8	13.0
68	IOWA	19	15.5	15.7	16.0	16.2	16.4
69	JACKSON	19	21.9	22.7	23.6	24.5	25.3
70	JEFFERSON	19	13.1	12.3	11.7	11.3	11.1
71	JOHNSON	19	80.7	84.7	88.6	92.1	95.2
72	JONES	19	20.3	20.8	21.3	21.8	22.3
73	KEOKUK	19	13.6	13.7	13.7	13.7	13.8
74	LEE	19	39.9	39.2	39.0	39.1	39.4
75	LINN	19	167.7	170.4	174.0	177.8	181.2
76	LOUISA	19	11.0	11.2	11.4	11.5	11.6
77	MUSCATINE	19	41.2	43.5	45.7	47.5	48.8
78	SCOTT	19	154.9	164.8	172.9	180.1	186.0
79	VAN BUREN	19	7.7	7.4	7.3	7.1	7.0
80	WAPELLO	19	37.9	36.6	35.7	35.1	34.8
81	WASHINGTON	19	16.4	15.8	15.4	15.2	15.1
82	WINNESHIEK	19	21.0	20.9	20.9	20.9	21.0
83	ANOKA	27	200.3	225.0	255.5	283.0	305.9
84	BENTON	27	23.4	25.2	27.0	28.6	29.7
85	CARVER	27	34.4	36.5	40.3	43.8	46.9
86	CHISAGO	27	23.9	28.5	34.0	38.4	44.9
87	DAKOTA	27	181.1	204.3	234.6	264.8	293.3
88	DODGE	27	13.2	13.4	13.6	13.6	13.4
89	FILLMORE	27	21.1	20.9	20.7	20.2	19.5
90	GOODHUE	27	38.4	41.1	43.6	46.3	48.6
91	HENNEPIN	27	983.4	1005.2	1018.1	1019.2	1011.1
92	HOUSTON	27	18.2	18.4	18.8	19.1	19.2
93	ISANTI	27	21.7	25.3	29.0	33.0	37.0
94	LE SUEUR	27	22.9	23.8	24.4	24.9	25.1
95	MC LEOD	27	31.4	34.1	36.8	39.5	42.3
96	MEEKER	27	19.7	20.5	20.9	21.4	21.4
97	MOWER	27	44.1	44.9	45.0	44.5	43.1
98	OLMSTED	27	97.8	105.9	114.1	121.5	127.4
99	RAMSEY	27	485.7	494.1	498.8	495.0	487.2
100	RICE	27	44.7	46.4	47.6	49.0	50.2
101	SCOTT	27	39.1	43.0	47.8	52.5	56.8
102	SHERBURNE	27	25.5	29.6	34.0	39.4	45.3
103	SIBLEY	27	16.1	16.3	16.4	16.5	16.3
104	STEELE	27	29.0	30.3	31.2	31.8	31.9
105	WABASHA	27	18.3	18.7	18.8	19.0	19.0
106	WASHINGTON	27	103.7	113.4	128.1	142.1	154.4
107	WINONA	27	46.8	48.1	48.9	49.6	50.1
108	WRIGHT	27	51.2	59.6	69.5	76.3	82.0
109	ADAIR	29	26.1	28.0	30.0	32.2	34.5
110	AUDUBON	29	25.9	26.2	26.5	26.8	27.1
111	BOONE	29	94.5	98.2	101.9	105.9	109.9
112	CALLAWAY	29	28.4	29.9	31.4	33.0	34.7
113	CLARK	29	7.8	7.6	7.4	7.2	7.0
114	FRANKLIN	29	70.3	80.8	91.2	104.4	118.3
115	GASCONADE	29	13.6	14.6	15.7	16.9	18.1
116	JEFFERSON	29	134.9	156.9	178.9	208.1	237.3
117	KNOX	29	5.2	5.0	4.8	4.6	4.4
118	LEWIS	29	10.4	10.0	9.7	9.4	9.0
119	LINCOLN	29	21.5	24.0	26.4	29.4	32.4
120	MACON	29	16.2	16.8	17.4	18.0	18.7
121	MARION	29	27.7	27.6	27.5	27.4	27.3
122	MONROE	29	10.5	11.2	12.0	12.8	13.7
123	MONTGOMERY	29	11.8	12.4	12.9	13.5	14.1
124	PIKE	29	17.2	17.4	17.7	18.0	18.2
125	RALLS	29	9.2	10.2	11.2	12.4	13.6
126	RANDOLPH	29	25.6	27.7	29.8	32.2	34.7

127	ST CHARLES	29	144.4	165.4	197.1	244.6	291.8
128	ST FRANCOI	29	40.4	42.8	45.1	47.7	50.3
129	ST LOUIS	29	971.7	993.8	1015.9	1039.0	1062.1
130	STE GENEVI	29	14.3	15.2	16.2	17.3	18.4
131	SCHUYLER	29	5.3	5.8	6.2	6.8	7.3
132	SCOTLAND	29	5.5	5.5	5.5	5.5	5.5
133	SHELBY	29	7.6	7.6	7.5	7.4	7.4
134	WARREN	29	14.5	18.4	22.4	28.5	34.6
135	WASHINGTON	29	17.2	18.6	20.0	21.6	23.3
136	ST LOUIS C	29	459.5	400.0	340.4	296.3	252.2
137	ADAMS	55	12.7	14.9	17.3	19.9	22.5
138	BARRON	55	39.1	42.5	45.8	48.7	51.0
139	BUFFALO	55	14.6	15.3	15.9	16.4	16.8
140	CHIPPEWA	55	50.8	53.2	55.7	57.6	59.1
141	CLARK	55	31.7	33.0	34.4	35.5	36.0
142	CRAWFORD	55	15.8	16.3	16.8	17.2	17.2
143	DUNN	55	31.2	32.3	33.3	34.2	35.2
144	EAU CLAIRE	55	73.9	77.5	80.8	83.8	86.6
145	GRANT	55	53.2	56.0	58.8	61.3	63.4
146	GREEN	55	30.9	33.7	36.5	39.1	41.3
147	IOWA	55	19.7	20.4	21.2	21.8	22.0
148	JACKSON	55	16.3	17.0	17.7	18.1	18.3
149	JUNEAU	55	20.1	21.2	22.5	23.5	24.3
150	LA CROSSE	55	85.8	88.9	91.6	93.8	95.6
151	LAFAYETTE	55	18.7	19.7	20.9	21.9	22.4
152	MONROE	55	34.5	36.7	38.8	40.4	41.5
153	PEPIN	55	7.4	7.6	7.9	8.0	8.1
154	PIERCE	55	32.4	35.8	39.4	43.2	47.1
155	POLK	55	33.2	37.3	41.8	46.0	50.1
156	RICHLAND	55	16.0	15.8	15.6	15.2	14.7
157	ROCK	55	145.4	154.8	164.6	173.3	180.2
158	ST CROIX	55	43.6	49.9	57.0	64.1	70.8
159	SAUK	55	41.8	43.8	45.8	47.2	48.3
160	TREMPEALEA	55	24.7	25.8	26.8	27.7	28.3
161	VERNON	55	25.6	26.6	27.5	28.1	28.3
162	WOOD	55	70.0	73.5	77.0	79.9	81.5

DISTANCES FROM COUNTIES TO POOLS

1	431	421	417	414	420	393	381	369	357	338	328	312	275	235	210	193	165	145	130	119	88	58	35	23	25	40	69	100
2	548	534	535	535	540	515	500	488	472	447	440	431	393	361	308	283	258	245	248	243	211	196	183	169	158	123	93	66
3	344	337	333	326	318	287	269	230	218	193	183	172	139	113	89	108	129	150	171	186	217	249	263	276	283	281	291	314
4	437	428	423	422	422	399	384	371	370	330	330	314	276	233	207	184	158	139	128	120	88	67	55	48	45	45	63	92
5	368	359	355	349	343	314	293	279	262	242	229	212	180	136	105	73	58	64	82	96	104	132	163	179	189	193	204	227
6	506	493	489	490	494	471	450	446	433	411	404	392	353	307	278	259	230	213	201	195	163	138	113	93	72	45	11	21
7	314	301	300	294	285	255	232	217	199	183	168	143	118	78	49	17	35	58	75	99	118	148	183	203	218	230	246	274
8	450	440	430	434	434	410	394	381	367	346	336	320	283	238	209	185	157	140	134	133	102	89	88	91	78	69	72	90
9	503	494	490	489	491	464	448	435	419	394	387	373	342	288	254	228	204	192	191	197	167	159	158	149	139	118	99	94
10	614	606	599	592	563	538	512	498	484	475	453	427	395	361	336	306	277	261	261	259	228	214	201	184	166	139	106	79
11	399	392	387	370	346	318	286	272	256	248	223	204	182	148	125	94	100	116	135	158	163	193	225	248	249	254	262	276
12	592	584	577	555	540	513	487	473	458	448	472	401	370	336	309	277	250	245	238	239	210	202	195	182	166	142	116	94
13	440	432	426	411	389	363	338	326	311	300	280	256	221	188	163	135	105	88	87	89	63	69	89	97	102	107	119	139
14	531	521	516	502	482	457	434	423	409	394	380	353	320	288	265	248	209	199	186	177	146	126	109	92	74	48	24	34
15	426	419	412	399	379	356	334	322	310	302	282	256	221	195	176	158	128	106	92	78	49	28	26	42	60	78	106	135
16	397	390	383	370	348	324	301	289	276	266	247	220	187	154	138	120	89	68	54	42	17	26	62	81	96	115	139	166
17	377	369	363	347	326	296	269	256	241	230	210	184	152	117	91	62	31	23	40	61	65	96	131	149	162	174	191	212
18	650	642	636	622	608	574	548	533	519	509	488	463	430	395	370	339	311	297	298	297	266	255	243	226	208	188	148	128
19	552	544	538	526	504	479	455	444	428	421	401	374	341	307	287	260	230	211	213	198	167	147	128	109	89	62	29	14
20	309	302	296	288	255	227	198	184	167	155	135	112	86	51	27	22	54	74	89	108	132	164	200	221	238	252	272	294
21	407	399	392	378	363	329	301	291	276	265	245	219	186	152	128	100	69	53	55	64	48	71	101	116	127	136	152	174
22	426	419	413	397	372	343	314	308	282	270	251	230	203	168	141	106	98	104	124	144	141	167	197	208	216	216	223	234
23	382	375	369	353	328	299	278	256	239	228	207	185	154	123	96	64	65	77	98	128	127	157	191	206	216	225	235	253
24	434	426	416	405	385	361	336	324	311	301	282	255	221	191	169	145	114	94	86	79	47	41	57	67	76	86	105	131
25	544	536	530	516	495	469	445	432	417	408	387	362	328	296	272	243	213	197	193	189	158	144	133	118	101	77	53	45
26	585	577	570	556	536	511	487	474	460	451	430	404	373	334	314	286	257	234	235	231	199	182	166	147	123	100	68	39
27	623	615	609	596	572	546	519	505	490	480	460	435	401	367	341	309	283	269	262	270	241	232	221	207	189	162	131	106
28	432	424	418	402	379	351	323	309	291	280	260	236	207	171	143	109	90	120	101	118	108	130	157	168	174	176	181	195
29	467	459	453	438	416	389	363	359	336	324	305	278	247	212	187	156	129	113	114	116	90	93	104	107	108	103	107	123
30	496	488	489	467	445	419	394	380	365	354	335	309	276	242	216	186	158	142	143	144	116	112	117	113	107	96	90	99
31	375	364	361	347	324	299	275	262	248	237	218	192	158	127	106	86	55	33	23	27	26	59	95	115	131	147	169	194
32	621	614	606	593	573	550	526	513	500	490	473	445	411	380	357	330	299	282	276	268	237	216	193	172	150	123	94	67
33	567	560	552	538	517	490	465	451	436	426	406	380	348	314	288	259	230	215	214	213	184	172	164	150	135	111	83	69
34	511	503	496	482	460	435	411	397	384	374	355	328	295	262	239	211	181	164	160	154	125	110	103	93	80	63	53	64
35	357	354	351	336	311	282	252	238	220	204	189	167	144	109	85	56	66	85	104	127	134	170	205	223	235	243	267	274
36	436	428	421	408	385	357	330	318	301	289	270	244	212	178	150	120	93	82	89	100	82	100	123	133	139	141	148	169
37	656	648	642	627	606	581	557	543	529	518	498	471	439	405	380	351	322	307	304	300	270	253	236	216	197	168	135	104
38	501	492	486	472	453	428	407	395	383	374	355	328	294	265	245	221	191	170	160	154	119	94	73	54	37	16	32	62
39	422	415	409	393	369	340	311	297	280	260	249	225	197	161	134	98	85	89	104	123	118	143	172	185	192	194	201	215
40	650	642	636	623	602	577	554	540	528	517	498	473	439	405	382	354	326	307	302	296	265	246	224	204	181	154	123	92
41	361	353	347	331	308	283	257	245	230	219	202	176	148	107	84	62	31	8	23	37	58	83	120	139	156	178	193	215
42	606	598	590	577	556	533	508	494	481	471	453	424	392	360	336	309	279	261	251	251	219	200	181	161	139	112	79	48
43	513	505	500	485	463	438	413	397	383	372	353	326	293	260	234	204	175	160	161	162	133	127	128	121	112	96	85	89
44	459	451	445	431	410	386	363	350	337	327	304	282	247	217	195	171	140	120	112	104	73	58	58	58	60	63	74	104
45	503	495	489	476	454	429	407	394	380	372	352	325	291	260	238	212	181	162	156	149	118	99	86	73	61	42	41	61
46	413	405	399	384	360	333	306	292	276	264	245	219	188	153	126	93	67	61	73	86	77	100	130	144	153	158	170	188
47	330	323	316	301	276	247	217	203	185	174	154	133	111	79	58	40	63	89	104	120	147	179	215	235	250	262	278	297
48	405	397	391	377	355	330	305	292	278	268	249	223	183	157	135	112	80	60	54	52	27	47	78	95	108	120	140	164
49	636	626	619	605	584	558	533	520	505	496	477	450	417	386	359	328	299	284	282	279	248	233	216	199	177	150	118	88
50	357	348	343	327	303	276	247	233	216	205	185	161	131	94	68	33	23	39	60	83	95	128	164	184	197	208	225	246
51	347	340	334	319	293	262	233	219	201	189	170	152	133	102	83	63	85	105	125	147	162	195	231	249	262	272	286	304
52	208	193	187	171	147	120	93	80	67	58	41	17	26	62	90	125	147	158	160	168	198	224	256	279	300	321	347	376
53	270	266	259	247	228	208	190	179	172	166	160	127	100	98	106	122	120	116	108	92	120	134	158	183	203	229	259	288
54	237	223	222	210	191	172	154	142	139	137	123	102	91	93	110	137	141	141	131	126	154	172	197	219	242	266	296	325
55	210	201	196	194	166	146	131	121	119	116	106	99	77	90	120	149	159	161	152	150	180	197	222	246	267	292	322	351
56	247	239	233	219	199	172	156	141	137	123	114	89	66	67	81	104	115	117	110	109	140	160	189	212	233	257	286	314
57	320	313	308	291	270	246	220	207	196	185	167	139	106	77	62	61	47	42	34	41	71	100	135	157	177	197	220	247
58	189	181	175	161	143	123	108	100	90	96	89	77	75	102	127	158	172	177	170	170	201	218	245	268	289	314	343	372
59	228	220	214	199	176	149	123	111	98	89	71	46	15	39	66	100	119	129	129	136	169	193	224	248	268	289	316	343
60	320	320	314	291	275	250	227	208	191	181	162	130	103	67	46	20	19	32	47	63	86	118	154	176	193	208	230	255
61	380	373	367	352	330	320	305	293	282	263	245	241	211	176	182	187	175	161	126	100	98	79	73	90	110	139	172	202
62	263	256	247	232	210	190	176	167	153	137	108	81	60	53	50	70	80	95	93	99	130	154	187	211	232	252	278	305



129	588	580	573	560	540	517	496	482	469	460	441	413	388	358	328	302	271	252	246	237	205	181	158	137	114	88	65	31
130	646	638	631	618	598	575	552	539	526	517	498	471	437	406	384	357	326	309	302	294	263	241	216	195	174	147	116	87
131	403	396	389	378	363	345	328	320	313	308	289	266	235	220	211	207	181	162	143	120	111	85	69	79	96	123	158	188
132	408	400	393	382	365	346	328	318	309	301	286	260	228	209	199	192	165	144	124	102	97	62	46	60	80	107	141	170
133	463	455	450	437	419	401	382	370	363	355	338	312	280	259	244	232	202	181	163	140	123	89	54	41	46	69	100	129
134	561	553	546	534	515	495	473	460	450	448	423	396	363	335	314	292	261	248	231	218	188	161	131	108	86	63	46	46
135	631	622	615	604	584	563	540	529	517	509	490	463	429	401	380	356	325	305	297	286	255	229	201	178	154	131	108	87
136	592	584	575	563	543	519	495	482	470	459	441	413	381	349	326	299	270	251	246	239	207	187	166	145	123	96	64	33
137	242	232	232	216	193	164	137	127	110	101	96	104	122	131	139	163	193	215	227	243	270	301	336	359	376	392	412	434
138	75	75	76	71	72	81	100	112	127	138	157	183	216	250	276	309	335	349	351	359	389	413	443	467	487	509	538	565
139	110	104	99	83	59	31	17	27	41	53	73	98	131	165	191	225	250	263	250	273	304	328	359	382	403	424	451	478
140	118	116	114	102	89	78	88	87	95	102	115	149	183	212	237	269	296	313	316	326	357	384	415	439	459	480	505	531
141	170	166	163	149	130	108	93	90	86	87	100	125	156	181	203	230	260	278	286	298	328	357	390	413	432	451	475	500
142	223	216	210	193	170	139	110	96	78	67	46	27	31	50	74	107	134	150	154	168	197	226	260	282	303	322	345	370
143	86	83	81	69	54	50	62	78	87	98	118	144	178	210	237	270	295	309	313	328	351	374	405	428	450	472	498	526
144	135	130	127	112	93	69	58	61	62	68	86	112	147	178	201	232	245	277	282	291	322	348	381	404	424	444	471	496
145	253	247	234	224	201	171	143	129	112	101	81	56	31	17	39	73	98	114	121	134	163	193	227	250	270	287	310	336
146	309	301	295	278	255	224	193	180	162	150	131	115	100	77	66	67	96	118	135	154	177	208	246	266	282	293	311	332
147	271	265	259	251	217	188	158	144	125	114	95	78	66	50	54	73	104	125	137	154	180	211	247	269	286	301	322	345
148	169	163	158	143	120	93	68	61	50	46	58	83	114	141	164	193	222	239	246	258	287	316	349	372	392	412	435	461
149	219	213	208	193	170	140	112	101	85	77	71	83	104	120	135	159	190	209	220	235	262	293	328	351	370	386	408	430
150	175	169	163	147	123	93	62	49	31	19	22	46	77	107	131	164	191	208	212	222	253	280	313	336	356	377	401	426
151	289	283	278	262	237	206	178	164	146	127	115	93	73	44	35	47	79	100	112	131	154	187	224	245	262	278	297	321
152	196	188	183	167	134	113	85	73	56	46	45	62	89	112	133	162	190	208	216	228	259	286	320	343	363	382	405	428
153	89	83	79	63	42	23	35	46	64	75	95	120	152	186	213	247	272	285	286	293	324	347	377	401	421	444	471	499
154	61	54	50	34	14	27	55	69	87	99	118	141	171	206	234	268	291	303	303	307	339	356	388	412	432	456	485	513
155	62	63	66	64	49	86	108	122	129	148	169	194	226	260	287	320	345	359	360	367	397	421	448	473	494	517	544	571
156	232	225	220	204	178	148	118	104	85	73	58	48	57	68	85	112	142	160	170	184	212	242	277	299	318	336	358	382
157	340	332	327	311	286	255	226	212	194	189	165	150	139	113	100	89	114	135	154	177	193	226	262	280	293	303	316	334
158	52	50	44	34	37	53	77	91	108	120	140	164	196	232	259	292	315	328	328	334	365	388	417	440	461	484	512	540
159	256	250	245	229	205	174	144	131	113	102	89	85	98	100	100	120	150	170	183	201	227	259	293	314	332	348	368	390
160	139	132	127	112	87	58	35	29	29	35	54	81	115	147	173	205	232	247	250	259	289	316	347	370	392	413	443	465
161	204	197	191	175	150	120	89	77	58	46	29	29	54	79	108	133	161	170	183	196	225	254	287	310	331	349	373	397
162	213	208	205	191	170	139	121	114	102	97	101	120	145	162	179	202	233	252	262	278	306	336	370	394	413	428	451	473

ALLOCATED POPULATION BY POOL, ZONE AND YEAR

ZONE	MILES
1	0-25
2	26-50
3	51-75

YEAR	
1	1980
2	1985
3	1990
4	1995
5	2000

ALLOCATED POPULATION BY POOL, ZONE, AND YEAR

YEAR 1

POOL	1	1569.4	480.6	325.2
POOL	2	1773.1	395.0	307.1
POOL	3	1572.8	576.5	263.4
POOL	4	770.5	1381.9	351.0
POOL	5	70.8	923.6	1488.6
POOL	6	25.7	214.4	1106.6
POOL	7	32.9	176.7	374.6
POOL	8	45.8	287.9	273.8
POOL	9	46.8	180.7	294.2
POOL	10	104.0	169.0	240.5
POOL	11	104.0	159.4	134.3
POOL	12	15.7	203.9	194.5
POOL	13	21.5	250.7	156.9
POOL	14	151.5	137.4	330.9
POOL	15	120.2	212.5	543.8
POOL	16	40.9	372.1	824.1
POOL	17	283.3	284.5	433.8
POOL	18	383.5	202.5	278.5
POOL	19	344.8	185.7	570.3
POOL	20	52.2	542.6	467.6
POOL	21	53.7	458.0	312.2
POOL	22	34.9	149.9	282.3
POOL	23	7.8	177.1	230.3
POOL	24	105.2	56.2	220.5
POOL	25	76.3	96.8	128.0
POOL	26	35.5	130.1	316.9
POOL	27	43.1	268.4	1835.5
POOL	28	158.7	2066.9	359.7

ALLOCATED POPULATION BY POOL, ZONE, AND YEAR

YEAR 2

POOL	1	1724.3	540.2	352.4
POOL	2	1837.7	447.1	332.1
POOL	3	1612.7	648.3	288.2
POOL	4	811.8	1446.4	385.4
POOL	5	76.5	977.4	1559.5
POOL	6	26.3	230.4	1167.1
POOL	7	34.0	187.4	390.2
POOL	8	48.1	301.5	287.3
POOL	9	48.1	186.3	310.2
POOL	10	107.3	175.1	294.3
POOL	11	107.3	164.9	138.3
POOL	12	16.3	209.2	201.6
POOL	13	22.3	260.7	161.7
POOL	14	159.1	142.5	338.6
POOL	15	125.8	220.9	561.9
POOL	16	42.0	387.0	867.6
POOL	17	296.7	294.4	451.0
POOL	18	400.5	210.8	284.7
POOL	19	350.3	192.4	543.1
POOL	20	54.7	560.2	477.2
POOL	21	53.7	474.0	321.3
POOL	22	44.0	154.5	246.1
POOL	23	7.6	175.5	238.0
POOL	24	104.5	56.7	227.7
POOL	25	77.1	96.8	130.6
POOL	26	35.4	133.0	355.7
POOL	27	45.4	244.9	1862.0
POOL	28	141.0	2036.8	394.7

ALLOCATED POPULATION BY POOL, ZONE, AND YEAR

YEAR 3

POOL	1	1771.6	617.3	379.8
POOL	2	1899.7	512.2	356.8
POOL	3	1644.2	737.6	314.1
POOL	4	860.7	1509.0	423.6
POOL	5	83.0	1039.8	1627.7
POOL	6	26.7	246.3	1235.1
POOL	7	34.7	197.7	404.5
POOL	8	48.9	314.6	299.8
POOL	9	48.9	191.5	325.6
POOL	10	110.4	180.4	307.6
POOL	11	110.4	169.7	142.2
POOL	12	16.8	214.2	208.0
POOL	13	23.0	271.3	167.1
POOL	14	167.1	148.2	347.2
POOL	15	131.9	230.0	583.4
POOL	16	43.3	404.5	914.1
POOL	17	310.2	304.3	471.4
POOL	18	417.3	219.1	291.3
POOL	19	376.2	198.6	596.8
POOL	20	57.1	579.0	487.2
POOL	21	53.8	488.7	331.8
POOL	22	83.8	157.6	293.4
POOL	23	7.4	177.1	244.9
POOL	24	106.4	57.1	234.7
POOL	25	80.4	97.3	133.5
POOL	26	35.8	138.5	345.8
POOL	27	47.8	281.8	1848.5
POOL	28	223.4	2038.0	431.1

ALLOCATED POPULATION BY POOL, ZONE, AND YEAR

YEAR 4

POOL	1	1747.2	690.3	406.8
POOL	2	1439.3	572.9	382.1
POOL	3	1656.3	822.8	337.9
POOL	4	901.9	1557.3	457.1
POOL	5	89.5	1094.5	1677.7
POOL	6	27.0	261.6	1294.2
POOL	7	35.4	206.8	416.8
POOL	8	49.6	325.7	310.8
POOL	9	49.6	195.3	338.9
POOL	10	112.9	144.1	319.2
POOL	11	112.9	173.4	144.8
POOL	12	17.2	218.0	213.0
POOL	13	23.7	280.8	171.4
POOL	14	174.5	153.2	355.1
POOL	15	137.7	238.4	605.9
POOL	16	44.9	422.9	965.1
POOL	17	324.5	317.5	495.0
POOL	18	436.2	229.2	301.5
POOL	19	393.7	205.0	616.3
POOL	20	59.0	599.9	501.3
POOL	21	54.4	510.0	344.3
POOL	22	84.0	163.0	306.7
POOL	23	7.2	181.1	254.0
POOL	24	109.7	58.6	242.8
POOL	25	85.3	98.3	137.8
POOL	26	36.5	146.2	453.5
POOL	27	30.7	336.9	1857.3
POOL	28	271.8	2057.4	480.1

ALLOCATED POPULATION BY POOL, ZONE, AND YEAR

YEAR 5

POOL	1	1804.2	765.6	431.2
POOL	2	1958.6	636.7	405.7
POOL	3	1652.7	902.7	364.9
POOL	4	934.9	1590.5	494.9
POOL	5	95.7	1139.8	1712.8
POOL	6	27.1	275.1	1342.5
POOL	7	35.8	213.9	426.6
POOL	8	50.1	333.9	319.6
POOL	9	50.1	197.7	349.5
POOL	10	114.8	186.0	328.4
POOL	11	114.8	175.7	146.1
POOL	12	17.6	220.2	216.6
POOL	13	24.2	289.0	173.9
POOL	14	180.9	156.6	362.3
POOL	15	142.8	246.1	628.0
POOL	16	47.1	441.7	1024.2
POOL	17	339.5	337.6	521.7
POOL	18	460.5	241.5	315.6
POOL	19	415.7	212.1	641.6
POOL	20	60.4	625.3	519.3
POOL	21	35.6	546.0	358.9
POOL	22	84.6	176.1	329.1
POOL	23	7.0	191.5	271.2
POOL	24	117.8	62.6	258.4
POOL	25	95.1	101.0	144.4
POOL	26	38.4	159.6	513.3
POOL	27	53.7	393.4	1851.3
POOL	28	320.1	2074.5	531.2

RECREATION ACTIVITY

Pools By Activity By Year

RECREATION ACTIVITY BASE PARTICIPATION RATES

1975

River, Urban	Picnic	Camp	Swim	Water Skiing	Boating	Sight-seeing	Fishing
Zone							
I	0.008	0.005	0.001	0.007	0.058	0.003	0.016
II	0.004	0.001	0.001	0.002	0.030	0.051	0.012
III	--	--	--	--	--	--	--
Lake							
Zone							
I	0.897	1.008	1.266	2.833	7.193	1.663	4.525
II	0.060	0.245	0.114	0.130	0.192	0.077	0.323
III	0.024	0.026	0.028	0.008	0.141	0.035	0.125
River, Rural							
Zone							
I	0.200	0.189	0.166	0.298	1.109	0.413	1.079
II	0.047	0.060	0.044	0.094	0.271	0.097	0.303
III	0.027	0.022	0.024	0.032	0.107	0.046	0.127

Source: GREAT Recreation Demand Analysis (June 1976).

RECREATIONAL ACTIVITIES - POOLS BY ACTIVITY BY YEAR

YEAR 1							
POOL 1	15.28	8.83	2.15	12.65	111.24	29.52	32.48
POOL 2	15.76	9.26	2.17	13.20	114.69	25.46	33.11
POOL 3	14.89	8.44	2.15	12.16	108.52	34.12	32.08
POOL 4	11.69	5.23	2.15	8.16	86.15	72.79	28.91
POOL 5	97.76	101.55	88.12	155.55	488.09	187.31	545.30
POOL 6	62.48	107.21	87.96	189.53	382.06	97.98	323.87
POOL 7	25.00	25.06	22.23	38.40	124.45	47.96	136.61
POOL 8	30.28	32.14	27.01	49.77	159.22	59.85	172.50
POOL 9	25.80	26.16	22.78	40.35	132.35	50.39	142.61
POOL 10	36.32	35.97	31.43	55.85	191.15	72.25	199.05
POOL 11	31.92	32.17	27.50	50.27	172.90	64.59	177.57
POOL 12	30.98	30.84	48.57	72.54	179.50	48.62	161.21
POOL 13	20.32	22.56	18.37	34.99	108.57	40.41	119.09
POOL 14	45.69	44.16	39.14	68.65	240.66	91.12	247.12
POOL 15	48.71	47.43	42.35	73.20	249.08	95.27	263.15
POOL 16	47.92	48.19	42.94	73.54	234.38	90.89	261.54
POOL 17	81.74	80.16	69.96	125.05	437.70	164.55	446.98
POOL 18	93.74	90.76	79.25	142.23	509.98	198.84	510.52
POOL 19	93.09	88.86	79.09	138.46	493.73	186.65	500.73
POOL 20	48.57	52.71	43.76	81.52	254.97	95.70	280.12
POOL 21	40.70	44.50	36.56	69.04	217.08	80.97	236.37
POOL 22	31.65	31.25	27.46	48.42	164.98	62.59	172.88
POOL 23	16.10	17.17	14.61	26.34	81.29	30.99	91.33
POOL 24	29.63	28.11	25.23	43.69	155.49	59.04	158.54
POOL 25	23.27	23.04	20.00	35.93	124.55	46.79	127.91
POOL 26	21.77	21.49	19.22	32.95	108.53	41.86	117.97
POOL 27	69.62	62.38	61.84	93.14	307.24	125.26	350.53
POOL 28	138.60	161.92	125.22	253.09	774.62	282.58	843.19

RECREATIONAL ACTIVITIES - POOLS BY ACTIVITY BY YEAR

YEAR 2

POOL 1	15.96	9.16	2.26	13.15	116.22	32.72	34.07
POOL 2	16.49	9.64	2.28	13.76	120.00	28.32	34.77
POOL 3	15.49	8.71	2.24	12.59	112.99	37.90	33.58
POOL 4	12.28	5.51	2.26	8.58	90.48	76.20	30.35
POOL 5	103.42	107.49	93.20	164.70	517.02	198.30	577.18
POOL 6	65.43	113.30	92.24	113.80	397.97	102.33	339.31
POOL 7	26.14	26.25	23.25	40.23	130.24	50.17	143.02
POOL 8	31.55	33.50	28.15	51.87	165.79	62.33	179.74
POOL 9	26.75	27.09	23.63	41.77	137.02	52.21	147.74
POOL 10	37.64	37.26	32.58	57.85	197.94	74.84	206.21
POOL 11	32.94	33.22	28.39	51.90	178.48	66.67	183.31
POOL 12	32.01	72.93	50.13	74.99	185.84	50.27	166.53
POOL 13	21.08	23.41	19.05	36.33	112.68	41.94	123.59
POOL 14	47.66	46.07	40.81	71.64	251.29	95.11	257.85
POOL 15	50.71	49.39	44.09	76.23	259.50	99.23	274.03
POOL 16	50.01	50.25	44.82	76.66	244.29	94.79	272.76
POOL 17	85.35	83.66	73.03	130.52	457.08	171.84	466.62
POOL 18	97.69	94.61	82.59	148.27	531.74	198.95	532.17
POOL 19	96.85	92.47	82.27	144.11	514.10	194.29	521.11
POOL 20	50.15	54.45	45.18	84.23	263.54	98.88	289.37
POOL 21	41.69	45.66	37.48	70.84	222.39	82.94	242.37
POOL 22	31.79	31.44	27.61	48.71	165.64	62.84	173.78
POOL 23	16.19	17.20	14.70	26.38	81.45	31.11	91.60
POOL 24	29.71	28.16	25.31	43.76	155.62	59.13	158.85
POOL 25	23.50	23.25	20.19	36.25	125.71	47.24	129.11
POOL 26	22.93	22.50	20.27	34.43	113.36	43.88	123.67
POOL 27	70.86	64.24	64.00	96.13	315.95	128.16	359.67
POOL 28	144.54	166.99	130.40	261.81	806.02	294.61	871.37

RECREATIONAL ACTIVITIES - POOLS BY ACTIVITY BY YEAR

YEAR 3							
POOL 1	16.64	9.48	2.39	13.64	121.27	36.80	35.75
POOL 2	17.25	10.01	2.41	14.32	125.55	31.82	36.54
POOL 3	16.10	8.96	2.38	12.98	117.49	42.55	35.16
POOL 4	12.92	5.81	2.37	9.04	95.19	79.54	31.88
POOL 5	109.42	113.88	98.59	174.56	548.00	210.01	611.33
POOL 6	68.37	119.37	96.46	117.54	413.49	186.60	354.76
POOL 7	27.15	27.32	24.17	41.87	135.34	52.11	148.72
POOL 8	32.66	34.71	29.15	53.74	171.57	64.50	186.16
POOL 9	27.57	27.98	24.36	42.99	140.97	53.75	152.14
POOL 10	38.86	38.46	33.65	59.70	204.24	77.24	212.85
POOL 11	33.90	34.18	29.21	53.40	183.64	68.60	188.60
POOL 12	32.91	74.82	51.51	77.10	191.30	51.71	171.21
POOL 13	21.86	24.30	19.77	37.70	116.91	43.50	128.24
POOL 14	49.76	48.11	42.59	74.84	262.63	99.36	269.30
POOL 15	52.94	51.56	46.02	79.59	271.03	103.62	286.10
POOL 16	52.35	52.56	46.92	80.18	255.45	99.17	285.37
POOL 17	89.07	87.26	76.20	136.13	476.92	179.31	486.78
POOL 18	101.62	98.42	85.90	154.27	553.33	207.00	553.65
POOL 19	100.69	96.15	85.51	149.87	534.88	202.09	541.89
POOL 20	51.79	56.25	46.65	87.03	272.36	102.16	298.92
POOL 21	42.69	46.79	38.40	72.59	227.60	84.89	248.26
POOL 22	32.09	31.75	27.89	49.18	167.04	63.39	175.43
POOL 23	16.42	17.41	14.90	26.69	82.40	31.50	92.75
POOL 24	30.30	28.70	25.81	44.58	158.58	60.28	161.91
POOL 25	24.26	23.97	20.83	37.38	129.82	48.78	133.19
POOL 26	24.36	23.78	21.54	36.35	119.59	46.43	130.86
POOL 27	72.71	66.61	64.70	99.89	327.17	132.11	371.72
POOL 28	152.11	173.99	137.10	271.94	846.18	309.78	913.31

RECREATIONAL ACTIVITIES - POOLS BY ACTIVITY BY YEAR

YEAR 4

POOL 1	17.14	9.68	2.49	13.96	124.95	40.60	37.04
POOL 2	17.81	10.27	2.51	14.72	129.67	35.04	37.90
POOL 3	16.54	9.18	2.48	13.24	120.75	46.93	36.37
POOL 4	13.44	6.07	2.46	9.43	99.03	82.13	33.12
POOL 5	114.64	119.49	103.28	183.24	575.38	220.30	641.27
POOL 6	78.98	124.96	100.24	120.85	424.92	110.34	368.45
POOL 7	28.05	28.27	24.98	43.33	139.90	53.85	153.79
POOL 8	33.62	35.75	30.02	55.34	176.53	66.37	191.68
POOL 9	28.25	28.55	24.96	43.98	144.19	55.02	155.73
POOL 10	39.85	39.41	34.50	61.16	209.25	79.17	218.14
POOL 11	34.64	34.93	29.85	54.58	187.69	70.11	192.75
POOL 12	33.62	76.29	52.59	78.77	195.61	52.84	174.87
POOL 13	22.57	25.10	20.40	38.94	120.72	44.91	132.42
POOL 14	51.69	49.98	44.23	77.76	273.03	103.26	279.80
POOL 15	55.10	53.66	47.89	82.83	282.15	107.87	297.76
POOL 16	54.91	55.09	49.22	84.02	267.67	103.96	299.15
POOL 17	93.19	91.27	79.72	142.39	498.88	187.59	509.28
POOL 18	106.15	102.83	89.73	161.18	578.12	216.25	578.40
POOL 19	105.02	100.27	89.17	156.31	558.11	210.83	565.19
POOL 20	53.53	58.17	48.22	90.01	281.64	105.62	309.10
POOL 21	44.15	48.46	39.73	75.17	235.38	87.77	256.95
POOL 22	32.74	32.40	28.48	50.17	170.15	64.61	178.98
POOL 23	16.81	17.81	15.26	27.30	84.24	32.22	94.90
POOL 24	31.25	29.59	26.62	45.97	163.52	62.16	166.96
POOL 25	25.40	25.05	21.79	39.07	135.98	51.10	139.32
POOL 26	26.42	25.65	23.38	39.13	128.62	50.12	141.28
POOL 27	76.14	70.66	67.81	106.21	346.26	139.05	392.66
POOL 28	164.02	185.38	147.17	289.76	910.35	333.91	977.64

RECREATIONAL ACTIVITIES - POOLS BY ACTIVITY BY YEAR

YEAR 5							
POOL 1	17.50	9.79	2.57	14.16	127.61	44.46	38.05
POOL 2	18.22	10.43	2.60	14.98	132.70	38.35	38.98
POOL 3	16.83	9.17	2.56	13.37	122.94	51.00	37.20
POOL 4	13.84	6.26	2.53	9.73	101.94	83.92	34.04
POOL 5	118.96	124.16	107.14	190.47	598.29	228.87	666.15
POOL 6	73.03	124.62	103.26	123.28	437.04	113.24	379.30
POOL 7	28.73	28.99	25.59	44.43	143.32	55.16	157.62
POOL 8	34.34	36.53	30.68	56.54	180.24	67.78	195.82
POOL 9	28.75	29.02	25.40	44.70	146.53	55.95	158.35
POOL 10	40.57	40.08	35.12	62.20	212.86	80.56	221.93
POOL 11	35.16	35.45	30.29	55.40	190.56	71.18	195.66
POOL 12	34.20	77.32	53.45	88.22	199.42	53.81	177.84
POOL 13	23.12	25.74	20.91	39.94	123.76	46.03	135.76
POOL 14	53.32	51.56	45.61	80.22	281.82	106.57	288.65
POOL 15	57.08	55.57	49.61	85.78	292.25	111.74	308.41
POOL 16	57.83	57.94	51.83	88.33	281.52	109.41	314.73
POOL 17	97.85	95.90	83.73	149.60	523.82	196.96	534.87
POOL 18	111.97	108.47	94.64	170.03	609.91	228.13	610.14
POOL 19	110.43	105.41	93.74	164.35	587.14	221.77	594.29
POOL 20	55.51	60.39	50.02	93.44	292.14	109.54	320.74
POOL 21	46.47	51.16	41.87	79.38	248.03	92.43	271.01
POOL 22	34.08	33.80	29.69	52.30	176.76	67.16	186.44
POOL 23	17.72	18.78	16.10	28.77	88.68	33.94	100.02
POOL 24	33.45	31.47	28.48	49.20	175.09	66.55	178.71
POOL 25	27.67	27.21	23.70	42.45	148.29	55.72	151.55
POOL 26	29.04	28.13	25.72	42.87	140.76	54.95	154.98
POOL 27	79.48	74.70	70.44	112.54	345.32	145.96	413.53
POOL 28	175.80	196.66	157.16	307.39	974.02	357.86	1041.42

GROWTH RATES APPLIED TO POOLS
BY ACTIVITIES BY YEAR

ACTIVITY GROWTH RATES

Recreation Activity	Years				
	1980	1985	1990	1995	2000
Picnicking	1.00	1.15	1.30	1.45	1.60
Camping	1.00	1.30	1.60	1.90	2.20
Swimming	1.00	1.25	1.50	1.75	2.00
Water Skiing	1.00	1.45	1.90	2.35	2.80
Boating	1.00	1.25	1.50	1.75	2.00
Sightseeing	1.00	1.20	1.40	1.60	1.80
Fishing	1.00	1.05	1.10	1.15	1.20

Source: MRI COMPATRAX recreation participation/allocation model.

GROWTH RATES APPLIED TO POOLS BY ACTIVITIES BY YEAR

YEAR 1

POOL 1	15.28	8.83	2.15	12.65	111.24	29.52	32.48
POOL 2	15.76	9.26	2.17	13.20	114.69	25.46	33.11
POOL 3	14.89	8.44	2.15	12.16	108.52	34.12	32.08
POOL 4	11.69	5.23	2.15	8.16	86.15	72.79	28.91
POOL 5	97.76	101.55	88.12	155.55	488.09	187.31	545.30
POOL 6	62.48	107.21	87.96	109.53	382.06	97.98	323.87
POOL 7	25.00	25.06	22.23	38.40	124.45	47.96	136.61
POOL 8	30.28	32.14	27.01	49.77	159.22	59.85	172.50
POOL 9	25.80	26.16	22.78	40.35	132.35	50.39	142.61
POOL 10	36.32	35.97	31.43	55.85	191.15	72.25	199.05
POOL 11	31.92	32.17	27.50	50.27	172.90	64.59	177.57
POOL 12	30.98	30.84	26.57	48.54	179.50	48.62	161.21
POOL 13	20.32	22.56	18.37	34.99	108.57	40.41	119.09
POOL 14	45.69	44.16	39.14	68.65	240.66	91.12	247.12
POOL 15	48.71	47.43	42.35	73.20	249.08	95.27	263.15
POOL 16	47.92	48.19	42.94	73.54	234.38	90.89	261.54
POOL 17	81.74	80.16	69.96	125.05	437.70	164.55	446.98
POOL 18	93.76	90.76	79.25	142.23	509.98	190.84	518.52
POOL 19	93.09	88.86	79.09	138.46	493.73	186.65	500.73
POOL 20	48.57	52.71	43.76	81.52	254.97	95.70	280.12
POOL 21	40.70	44.50	36.56	69.04	217.08	80.97	236.37
POOL 22	31.65	31.25	27.46	48.42	164.98	62.59	172.88
POOL 23	16.10	17.17	14.61	26.34	81.29	30.99	91.33
POOL 24	29.63	28.11	25.23	43.69	155.49	59.04	158.54
POOL 25	23.27	23.04	20.00	35.93	124.55	46.79	127.91
POOL 26	21.77	21.49	19.22	32.95	108.53	41.86	117.97
POOL 27	69.62	62.38	61.84	91.14	307.24	125.26	350.53
POOL 28	138.60	161.92	125.92	253.09	774.62	282.58	843.19

GROWTH RATES APPLIED TO POOLS BY ACTIVITIES BY YEAR

YEAR 2

POOL 1	18.35	11.91	2.83	19.07	145.27	39.27	35.77
POOL 2	18.96	12.53	2.86	19.95	150.00	33.98	36.51
POOL 3	17.82	11.93	2.89	18.75	141.23	45.48	35.26
POOL 4	14.12	7.16	2.82	12.43	113.10	91.44	31.86
POOL 5	118.94	139.73	116.50	238.81	646.28	237.97	606.04
POOL 6	75.24	147.79	115.30	185.81	497.47	122.79	356.28
POOL 7	30.06	34.13	29.07	58.34	162.80	60.28	150.17
POOL 8	36.28	43.55	35.18	75.21	207.24	74.79	188.73
POOL 9	30.76	35.22	29.53	60.57	171.28	62.65	155.13
POOL 10	43.28	48.44	40.72	83.89	247.42	89.80	216.52
POOL 11	37.89	43.18	35.48	75.26	223.10	80.01	192.47
POOL 12	36.81	94.80	62.66	108.73	232.30	68.33	174.84
POOL 13	24.24	30.44	23.82	52.67	140.85	50.32	129.77
POOL 14	54.81	59.89	51.01	103.88	314.11	114.13	270.74
POOL 15	50.32	64.21	55.11	110.54	324.37	119.08	287.73
POOL 16	57.52	65.32	56.03	111.15	305.36	113.75	286.40
POOL 17	98.16	108.76	91.29	189.26	571.35	206.21	489.95
POOL 18	112.35	122.99	103.24	215.00	664.68	238.74	558.78
POOL 19	111.37	120.21	102.84	208.97	642.63	233.15	547.17
POOL 20	57.68	70.78	56.48	122.13	329.42	118.66	303.83
POOL 21	47.95	59.36	46.85	102.72	277.98	99.52	254.49
POOL 22	36.55	40.87	34.51	70.63	207.05	75.41	182.47
POOL 23	18.62	22.36	18.37	38.25	101.82	37.33	96.18
POOL 24	34.17	34.61	31.63	63.45	194.53	70.96	166.80
POOL 25	27.02	30.23	25.24	52.57	157.14	56.69	135.56
POOL 26	26.38	29.24	25.33	49.93	141.70	52.66	129.85
POOL 27	81.49	84.51	78.75	139.39	394.94	153.79	377.65
POOL 28	166.27	217.09	163.50	378.45	1007.53	353.53	917.03

GROWTH RATES APPLIED TO POOLS BY ACTIVITIES BY YEAR

YEAR 3

POOL 1	21.63	15.16	3.58	25.91	181.91	51.52	39.33
POOL 2	22.42	16.02	3.62	27.21	188.32	44.55	40.20
POOL 3	20.94	14.33	3.57	24.67	176.24	59.57	38.67
POOL 4	16.80	9.30	3.55	17.18	142.79	111.36	35.07
POOL 5	142.24	182.22	147.89	331.67	822.00	294.02	672.47
POOL 6	88.88	190.99	144.69	223.33	620.24	149.23	390.24
POOL 7	35.30	43.71	36.25	79.55	203.01	72.96	163.59
POOL 8	42.46	55.54	43.73	102.10	257.35	90.30	204.78
POOL 9	35.84	44.63	36.54	81.69	211.45	75.25	167.35
POOL 10	50.52	61.53	50.47	113.43	306.35	108.14	234.13
POOL 11	44.06	54.68	43.81	101.46	275.46	96.04	207.46
POOL 12	42.79	119.71	77.27	146.50	286.95	72.40	188.33
POOL 13	28.42	38.88	29.65	71.64	175.36	60.90	141.07
POOL 14	64.69	76.98	63.89	142.19	393.94	139.10	296.23
POOL 15	68.82	82.50	69.03	151.23	406.55	145.07	314.71
POOL 16	68.06	84.10	70.39	152.34	383.17	138.84	313.91
POOL 17	115.79	139.61	114.29	258.64	715.38	251.04	535.45
POOL 18	132.11	157.48	128.86	293.12	830.00	289.80	609.01
POOL 19	130.89	153.84	128.27	284.76	802.33	282.92	596.08
POOL 20	67.32	90.00	69.97	165.16	408.54	143.02	328.81
POOL 21	55.49	74.86	57.60	137.92	341.41	118.84	273.09
POOL 22	41.72	50.80	41.83	93.43	250.56	88.75	192.98
POOL 23	21.34	27.86	22.35	50.71	123.61	44.10	102.02
POOL 24	39.34	45.92	38.71	84.71	237.88	84.39	178.11
POOL 25	31.53	38.35	31.25	71.02	194.72	68.30	146.51
POOL 26	31.66	38.05	32.30	69.07	179.38	65.00	143.95
POOL 27	94.53	106.57	97.05	189.78	490.75	184.95	408.89
POOL 28	197.74	278.38	205.65	516.69	1269.26	433.69	1004.64

GROWTH RATES APPLIED TO POOLS BY ACTIVITIES BY YEAR

YEAR 4							
POOL 1	24.85	18.38	4.35	32.81	218.66	64.96	42.59
POOL 2	25.82	19.51	4.40	34.59	226.92	56.06	43.59
POOL 3	23.99	17.30	4.34	31.11	211.31	75.09	41.83
POOL 4	19.49	11.53	4.30	22.16	173.30	131.40	38.09
POOL 5	166.23	227.04	180.74	430.61	1006.91	352.49	737.46
POOL 6	102.91	237.42	175.42	284.80	747.11	176.55	423.71
POOL 7	40.68	53.71	43.71	101.82	244.82	86.16	176.86
POOL 8	48.75	67.93	52.54	130.05	308.92	106.20	220.43
POOL 9	40.96	54.24	43.60	103.36	252.34	88.03	179.09
POOL 10	57.78	74.87	60.38	143.74	366.19	126.67	250.86
POOL 11	50.23	66.36	52.23	128.26	328.46	112.17	221.66
POOL 12	48.75	144.94	92.03	185.11	342.32	84.55	201.10
POOL 13	32.72	47.69	35.71	91.52	211.26	71.86	152.29
POOL 14	74.95	94.97	77.40	182.75	477.81	165.22	321.77
POOL 15	79.90	101.95	83.81	194.66	493.76	172.59	342.43
POOL 16	79.63	104.68	86.14	197.44	468.41	166.34	344.03
POOL 17	135.12	173.41	139.50	334.61	873.04	300.14	585.58
POOL 18	153.92	195.37	157.03	378.77	1011.71	346.00	665.16
POOL 19	152.27	190.51	156.04	367.34	976.70	337.33	649.97
POOL 20	77.62	110.53	84.39	211.53	492.88	168.99	355.46
POOL 21	64.01	92.07	69.53	176.65	411.91	140.44	295.50
POOL 22	47.48	61.57	49.83	117.90	297.76	103.38	205.82
POOL 23	24.37	33.85	26.70	64.15	147.42	51.56	109.14
POOL 24	45.31	56.22	46.58	108.03	286.16	99.45	192.00
POOL 25	36.83	47.60	38.14	91.81	237.97	81.76	160.22
POOL 26	38.30	48.73	40.91	91.96	225.09	80.19	162.47
POOL 27	110.38	134.26	118.68	248.48	605.95	222.49	451.56
POOL 28	237.83	352.22	267.54	680.92	1593.12	534.25	1124.28

GROWTH RATES APPLIED TO POOLS BY ACTIVITIES BY YEAR

YEAR 5

POOL 1	27.99	21.53	5.14	39.65	255.22	80.02	45.67
POOL 2	29.14	22.95	5.19	41.95	265.40	69.03	46.77
POOL 3	26.93	20.17	5.11	37.45	245.88	91.79	44.73
POOL 4	22.15	13.78	5.05	27.23	203.88	151.06	40.85
POOL 5	190.33	273.15	214.29	533.31	1196.57	411.97	799.37
POOL 6	116.86	285.17	206.52	345.18	874.08	203.83	455.16
POOL 7	45.97	63.77	51.19	124.39	286.63	99.28	189.14
POOL 8	54.95	80.38	61.36	158.32	360.49	122.01	234.98
POOL 9	46.00	63.84	50.81	125.15	293.07	100.70	188.02
POOL 10	64.91	88.18	70.24	174.17	425.72	145.01	266.32
POOL 11	56.26	78.00	60.59	155.12	381.12	128.12	234.79
POOL 12	54.72	170.11	106.90	224.61	398.83	96.85	213.41
POOL 13	36.99	56.63	41.81	111.84	247.53	82.85	162.92
POOL 14	85.32	113.42	91.23	224.62	563.65	191.82	346.38
POOL 15	91.33	122.26	99.21	240.19	584.51	201.12	370.09
POOL 16	92.53	127.46	103.67	247.32	563.05	196.94	377.68
POOL 17	156.56	210.98	167.46	418.88	1047.63	354.53	641.84
POOL 18	179.15	238.63	189.29	476.08	1219.82	410.63	732.16
POOL 19	176.69	231.90	187.47	460.17	1174.28	399.19	713.15
POOL 20	88.82	132.85	100.05	261.64	584.28	197.16	384.89
POOL 21	74.36	112.56	83.73	222.26	496.06	166.38	325.21
POOL 22	54.53	74.35	59.38	146.43	353.52	120.89	223.72
POOL 23	28.36	41.31	32.19	80.54	177.36	61.10	120.02
POOL 24	53.52	69.67	56.97	137.76	350.18	119.79	214.45
POOL 25	44.27	59.86	47.49	118.87	296.58	100.29	181.87
POOL 26	46.46	61.88	51.43	120.04	281.52	98.91	185.98
POOL 27	127.18	164.34	141.79	315.12	730.65	262.72	496.23
POOL 28	281.38	432.64	314.11	860.70	1948.04	644.15	1249.71

CONVERSION TO VISITOR DAYS

	Conversion Factor (Actual Days to Visitor Days)
River, Urban	0.963
Lake	0.494
River, Rural	0.581

CONVERSION RATES TO VISITOR DAYS BY POOLS BY ACTIVITIES BY YEAR

YEAR 1							
POOL 1	14.71	8.50	2.07	12.18	107.13	28.43	31.28
POOL 2	15.18	8.92	2.09	12.71	110.45	24.52	31.88
POOL 3	14.34	8.13	2.07	11.71	104.50	32.86	30.90
POOL 4	11.26	5.04	2.07	7.86	82.96	70.10	27.84
POOL 5	56.80	59.00	51.20	90.38	283.58	108.82	316.82
POOL 6	10.88	52.96	43.45	54.11	188.74	48.40	159.99
POOL 7	14.52	14.56	12.91	22.31	72.31	27.86	79.37
POOL 8	17.59	18.67	15.69	28.92	92.51	34.77	100.22
POOL 9	14.94	15.20	13.24	23.44	76.90	29.28	82.86
POOL 10	21.10	20.98	18.26	32.45	111.06	41.98	115.65
POOL 11	18.54	18.69	15.98	29.21	100.46	37.53	103.17
POOL 12	15.31	34.99	23.99	35.84	88.67	24.82	79.64
POOL 13	11.81	13.11	10.67	20.33	63.08	23.48	69.19
POOL 14	26.55	25.66	22.74	39.89	139.82	52.94	143.58
POOL 15	28.30	27.56	24.61	42.53	144.71	55.35	152.89
POOL 16	27.84	28.00	24.95	42.72	136.17	52.81	151.95
POOL 17	47.49	46.57	40.65	72.65	254.30	95.61	259.69
POOL 18	54.46	52.73	46.05	82.64	296.30	110.88	296.61
POOL 19	54.08	51.63	45.95	80.44	286.86	108.44	290.93
POOL 20	28.22	30.62	25.43	47.36	148.14	55.60	162.75
POOL 21	23.64	25.85	21.24	40.12	126.12	47.04	137.33
POOL 22	18.39	18.16	15.96	28.13	95.86	36.36	100.44
POOL 23	9.36	9.97	8.49	15.30	47.23	18.01	53.06
POOL 24	17.22	16.33	14.66	25.38	90.34	34.30	92.11
POOL 25	13.52	13.39	11.62	20.88	72.36	27.18	74.32
POOL 26	12.65	12.48	11.17	19.14	63.06	24.32	68.54
POOL 27	40.45	36.24	35.93	54.11	178.50	72.77	203.66
POOL 28	80.52	94.08	73.16	147.05	450.05	164.18	489.89

CONVERSION RATES TO VISITOR DAYS BY POOLS BY ACTIVITIES BY YEAR

YEAR 2							
POOL 1	17.67	11.47	2.73	18.36	139.89	37.81	34.45
POOL 2	18.26	12.06	2.75	19.21	144.45	32.72	35.16
POOL 3	17.16	10.91	2.72	17.57	136.01	43.80	33.96
POOL 4	13.60	8.89	2.72	11.97	108.91	88.06	30.68
POOL 5	69.10	81.19	67.69	138.75	375.49	138.26	352.11
POOL 6	37.17	72.76	56.96	81.51	245.75	60.66	176.00
POOL 7	17.47	19.83	16.89	33.90	94.59	34.98	87.25
POOL 8	21.08	25.30	20.44	43.70	120.41	43.45	109.65
POOL 9	17.87	20.44	17.14	35.19	99.51	36.40	90.13
POOL 10	25.15	28.14	23.66	48.74	143.75	52.18	125.80
POOL 11	22.01	25.09	20.62	43.72	129.62	46.48	111.83
POOL 12	18.19	46.83	30.95	53.71	114.75	29.80	86.38
POOL 13	14.08	17.68	13.84	30.60	81.84	29.24	75.40
POOL 14	31.84	34.80	29.64	60.35	182.50	66.31	157.30
POOL 15	33.88	37.31	32.02	64.22	188.46	69.18	167.17
POOL 16	33.42	37.95	32.55	64.58	177.41	66.09	166.40
POOL 17	57.03	63.19	53.04	109.96	331.95	119.81	284.66
POOL 18	65.27	71.46	59.98	124.91	386.18	138.71	324.65
POOL 19	64.71	69.86	59.75	121.41	373.37	135.46	317.91
POOL 20	33.51	41.13	32.81	70.96	191.39	68.94	176.53
POOL 21	27.86	34.49	27.22	59.68	161.51	57.82	147.86
POOL 22	21.24	23.75	20.05	41.04	120.29	43.81	106.02
POOL 23	10.82	12.99	10.67	22.22	59.16	21.69	55.88
POOL 24	19.85	21.27	18.38	36.86	113.02	41.23	96.91
POOL 25	15.70	17.56	14.66	30.54	91.30	32.94	78.76
POOL 26	15.32	16.99	14.72	29.01	82.33	30.60	75.44
POOL 27	47.35	48.52	45.75	80.99	229.46	89.35	219.41
POOL 28	96.61	126.13	94.99	219.89	585.38	205.40	532.80

CONVERSION RATES TO VISITOR DAYS BY POOLS BY ACTIVITIES BY YEAR

YEAR 3							
POOL 1	20.83	14.60	3.45	24.95	175.18	49.61	37.87
POOL 2	21.59	15.42	3.48	26.21	181.35	42.90	38.71
POOL 3	20.16	13.80	3.44	23.76	169.72	57.37	37.24
POOL 4	16.18	8.96	3.42	16.55	137.50	107.24	33.77
POOL 5	82.64	105.87	85.92	192.70	477.58	170.83	390.70
POOL 6	43.91	94.35	71.48	118.32	306.40	73.72	192.78
POOL 7	20.51	25.40	21.06	46.22	117.95	42.39	95.04
POOL 8	24.67	32.27	25.41	59.32	149.52	52.47	118.98
POOL 9	28.42	25.93	21.23	47.46	122.85	43.72	97.23
POOL 10	29.35	35.75	29.32	65.90	177.99	62.83	136.03
POOL 11	25.60	31.77	25.45	58.95	160.04	55.80	120.53
POOL 12	21.14	59.14	38.17	72.37	141.75	35.76	93.03
POOL 13	16.51	22.59	17.23	41.62	101.89	35.38	81.96
POOL 14	37.58	44.73	37.12	82.61	228.88	80.82	172.11
POOL 15	39.99	47.93	40.10	87.86	236.20	84.29	182.85
POOL 16	39.54	48.86	40.89	88.51	222.62	80.66	182.38
POOL 17	67.27	81.11	66.40	150.27	415.63	145.85	311.10
POOL 18	76.76	91.50	74.86	170.30	482.23	168.37	353.84
POOL 19	76.05	89.38	74.52	165.45	466.15	164.38	346.32
POOL 20	39.12	52.29	40.65	96.07	237.36	83.09	191.04
POOL 21	32.24	43.50	33.46	80.13	198.36	69.05	158.67
POOL 22	24.24	29.51	24.30	54.28	145.57	51.56	112.12
POOL 23	12.40	16.19	12.98	29.46	71.82	25.62	59.28
POOL 24	22.89	26.68	22.49	49.22	138.21	49.03	103.48
POOL 25	18.32	22.28	18.15	41.26	113.13	39.68	85.12
POOL 26	18.40	22.11	18.77	40.13	104.22	37.76	83.63
POOL 27	54.92	61.92	56.38	110.26	285.13	107.46	237.57
POOL 28	114.89	161.74	119.49	300.20	737.44	251.98	583.70

CONVERSION RATES TO VISITOR DAYS BY POOLS BY ACTIVITIES BY YEAR

YEAR 4							
POOL 1	23.93	17.70	4.19	31.59	210.57	62.55	41.02
POOL 2	24.86	18.79	4.23	33.31	218.52	53.98	41.98
POOL 3	23.18	16.66	4.18	29.96	203.49	72.31	40.28
POOL 4	18.77	11.10	4.14	21.34	166.89	126.54	36.68
POOL 5	96.58	131.91	105.01	250.19	585.02	204.79	428.47
POOL 6	50.84	117.28	86.66	140.30	369.07	87.21	209.31
POOL 7	23.63	31.21	25.40	59.16	142.24	50.06	102.76
POOL 8	28.32	39.47	30.53	75.56	179.48	61.70	128.07
POOL 9	23.88	31.61	25.38	60.05	146.61	51.15	104.05
POOL 10	33.57	44.50	35.08	83.51	212.76	73.60	145.75
POOL 11	29.18	38.56	30.35	74.52	190.83	65.17	128.79
POOL 12	24.08	71.60	45.47	91.45	169.10	41.77	99.34
POOL 13	19.01	27.71	20.74	53.17	122.74	41.75	88.48
POOL 14	43.54	55.18	44.97	106.18	277.61	95.99	186.95
POOL 15	46.42	59.23	48.69	113.10	286.87	100.27	198.95
POOL 16	46.26	60.82	50.05	114.71	272.15	96.64	199.88
POOL 17	78.51	100.75	81.05	194.41	507.23	174.38	340.22
POOL 18	89.43	113.51	91.23	220.07	587.80	201.03	386.46
POOL 19	88.47	110.69	90.66	213.42	567.46	195.99	377.63
POOL 20	45.10	64.22	49.03	122.90	286.36	98.18	206.52
POOL 21	37.14	53.49	40.40	102.63	239.32	81.60	171.68
POOL 22	27.58	35.77	28.95	68.50	173.00	60.06	119.58
POOL 23	14.16	19.67	15.52	37.27	85.65	29.96	63.41
POOL 24	26.33	32.67	27.06	62.76	166.26	57.78	111.55
POOL 25	21.40	27.65	22.16	53.34	138.26	47.51	93.09
POOL 26	22.25	28.31	23.77	53.43	130.78	46.59	94.39
POOL 27	64.13	78.80	68.95	148.01	352.06	129.26	262.36
POOL 28	138.18	204.64	149.63	395.62	925.60	310.40	653.21

CONVERSION RATES TO VISITOR DAYS BY POOLS BY ACTIVITIES BY YEAR

YEAR 5							
POOL 1	26.96	20.73	4.95	38.18	245.78	77.06	43.98
POOL 2	28.07	22.10	5.00	40.40	255.58	66.47	45.04
POOL 3	25.94	19.42	4.92	36.86	236.78	88.40	43.08
POOL 4	21.33	13.27	4.86	26.22	196.33	145.47	39.34
POOL 5	110.58	158.70	124.50	309.86	695.21	239.36	464.44
POOL 6	57.73	140.87	102.02	170.52	431.80	100.69	224.85
POOL 7	26.71	37.05	29.74	72.27	166.53	57.68	109.89
POOL 8	31.92	46.70	35.65	91.99	209.44	70.89	136.52
POOL 9	26.72	37.09	29.52	72.71	170.27	58.51	110.40
POOL 10	37.71	51.23	40.81	101.19	247.34	84.25	154.73
POOL 11	32.69	45.32	35.20	90.13	221.43	74.44	136.41
POOL 12	27.03	84.03	52.81	110.96	197.02	47.84	105.42
POOL 13	21.49	32.90	24.29	64.98	143.81	48.14	94.65
POOL 14	49.57	65.90	53.00	130.51	327.48	111.45	201.25
POOL 15	53.06	71.83	57.64	139.55	339.60	116.85	215.02
POOL 16	53.76	74.05	60.23	143.70	327.13	114.42	219.43
POOL 17	90.96	122.58	97.30	243.37	608.68	205.98	372.91
POOL 18	104.89	138.44	109.98	276.60	708.72	238.58	425.39
POOL 19	102.66	134.73	108.92	267.36	682.26	231.93	414.34
POOL 20	51.61	77.19	58.13	152.01	339.47	114.55	223.62
POOL 21	43.20	65.40	48.65	129.13	288.21	96.67	188.95
POOL 22	31.68	43.20	34.50	85.07	205.39	70.24	129.98
POOL 23	16.48	24.00	18.70	46.80	103.04	35.50	69.73
POOL 24	31.10	40.48	33.10	88.04	203.46	69.60	124.60
POOL 25	25.72	34.78	27.53	69.07	172.31	58.27	105.66
POOL 26	27.00	35.95	29.88	69.74	163.56	57.47	108.05
POOL 27	73.89	95.48	82.30	183.09	424.51	152.64	288.31
POOL 28	163.48	251.36	182.62	500.08	1131.81	374.25	726.08

EXPANSION OF VISITOR DAYS FOR PERSONS COMING FROM BEYOND 75 MILES

	Expansion Factor (Factor Times Visitor Days)
River, Urban	1.166
Lake	1.360
River, Rural	1.322

EXPANDED VISITOR DAYS FOR MORE DISTANT ORIGINS BY POOL BY ACTIVITY BY YEAR
YEAR 1

POOL 1	17.15	9.91	2.41	14.20	124.91	33.15	36.47
POOL 2	17.70	10.40	2.43	14.82	128.78	28.59	37.18
POOL 3	16.72	9.48	2.41	13.66	121.85	38.31	36.02
POOL 4	13.13	5.88	2.42	9.16	96.73	81.73	32.46
POOL 5	75.09	78.00	47.68	119.48	374.90	143.87	418.83
POOL 6	41.97	72.02	59.10	73.59	256.68	65.83	217.59
POOL 7	19.20	19.25	17.07	29.50	95.59	36.84	104.93
POOL 8	23.26	24.69	20.74	38.23	122.29	45.97	132.50
POOL 9	19.81	20.09	17.50	30.99	101.66	38.70	109.54
POOL 10	27.89	27.63	24.14	42.90	146.82	55.49	152.88
POOL 11	24.52	24.71	21.12	38.61	132.80	49.61	136.39
POOL 12	20.82	47.59	32.63	48.74	120.60	32.66	108.31
POOL 13	15.61	17.33	14.11	26.88	83.39	31.04	91.47
POOL 14	35.10	33.92	30.06	52.73	184.84	69.99	189.81
POOL 15	37.41	36.43	32.53	56.22	191.31	73.18	202.12
POOL 16	36.81	37.01	32.98	56.48	180.02	69.81	200.88
POOL 17	62.79	61.57	53.73	96.05	336.19	126.39	343.31
POOL 18	72.00	69.71	60.87	109.24	391.71	146.58	392.12
POOL 19	71.50	68.25	60.75	106.35	379.23	143.36	384.61
POOL 20	37.30	40.48	33.61	62.62	195.84	73.51	215.15
POOL 21	31.26	34.18	28.08	53.03	166.73	62.19	181.55
POOL 22	24.31	24.00	21.09	37.19	126.72	48.07	132.79
POOL 23	12.31	13.19	11.23	20.23	62.43	23.81	70.15
POOL 24	22.76	21.59	19.38	33.56	119.43	45.35	121.77
POOL 25	17.87	17.70	15.36	27.60	95.66	35.94	98.25
POOL 26	16.72	16.50	14.76	25.31	83.36	32.15	90.61
POOL 27	54.47	47.91	47.50	71.54	235.98	96.21	269.24
POOL 28	106.45	124.37	98.73	194.40	594.97	217.04	647.64

EXPANDED VISITOR DAYS FOR MORE DISTANT ORIGINS BY POOL BY ACTIVITY BY YEAR
YEAR 2

POOL 1	20.60	13.37	3.18	21.41	163.12	44.09	40.17
POOL 2	21.29	14.07	3.21	22.40	168.43	39.15	40.99
POOL 3	20.01	12.72	3.17	20.49	158.58	51.07	39.59
POOL 4	15.86	8.04	3.17	13.96	126.99	102.68	35.78
POOL 5	91.35	107.33	89.48	183.42	496.40	182.78	465.49
POOL 6	50.55	98.96	77.46	110.86	334.22	82.50	239.36
POOL 7	23.09	26.22	22.33	44.81	125.05	46.24	115.35
POOL 8	27.87	33.45	27.82	57.77	159.18	57.45	144.96
POOL 9	23.63	27.05	22.68	46.52	131.55	48.12	119.15
POOL 10	33.24	37.20	31.28	64.43	190.04	68.98	166.30
POOL 11	29.18	33.17	27.25	57.80	171.36	61.45	147.83
POOL 12	24.73	63.69	42.10	73.05	156.07	40.53	117.47
POOL 13	18.62	23.38	18.29	40.46	108.19	38.65	99.67
POOL 14	42.10	46.88	39.18	78.79	241.26	87.66	207.95
POOL 15	44.80	49.32	42.33	84.90	249.15	91.46	221.00
POOL 16	44.18	50.17	43.03	85.37	234.54	87.37	219.98
POOL 17	75.39	83.54	70.12	145.37	438.84	158.18	376.32
POOL 18	86.29	94.46	79.30	165.14	510.53	183.37	429.19
POOL 19	85.54	92.33	78.99	160.50	493.59	179.08	420.27
POOL 20	44.30	54.37	43.38	93.81	253.02	91.14	233.37
POOL 21	36.83	45.59	35.99	78.90	213.51	76.44	195.47
POOL 22	28.08	31.39	26.51	54.25	159.03	57.92	140.15
POOL 23	14.30	17.18	14.11	29.38	78.21	28.47	73.88
POOL 24	26.25	28.12	24.30	48.73	149.41	54.50	128.11
POOL 25	20.75	21.22	19.39	40.38	120.70	43.54	104.12
POOL 26	20.26	22.46	19.46	38.35	108.84	40.45	99.74
POOL 27	62.59	68.14	60.49	107.07	303.34	118.12	290.07
POOL 28	127.71	166.74	125.58	230.69	773.87	271.54	704.36

EXPANDED VISITOR DAYS FOR MORE DISTANT ORIGINS BY POOL BY ACTIVITY BY YEAR
YEAR 3

POOL 1	24.29	17.02	4.02	29.09	204.26	57.85	44.16
POOL 2	25.17	17.98	4.06	30.56	211.46	59.02	45.13
POOL 3	23.51	16.09	4.01	27.70	197.89	66.89	43.43
POOL 4	18.86	10.44	3.99	19.29	160.33	125.04	39.38
POOL 5	109.26	139.96	113.59	254.75	631.36	225.83	516.51
POOL 6	59.71	128.32	97.21	150.04	416.70	100.26	262.18
POOL 7	27.11	33.57	27.84	61.10	155.93	56.04	125.65
POOL 8	32.61	42.66	33.58	78.42	197.66	69.36	157.29
POOL 9	27.53	34.28	28.06	62.74	162.41	57.80	128.54
POOL 10	38.81	47.26	38.76	87.12	235.30	83.06	179.83
POOL 11	33.84	42.00	33.65	77.93	211.57	73.76	159.35
POOL 12	28.75	80.43	51.91	98.42	192.78	48.64	126.53
POOL 13	21.83	29.86	22.77	55.02	134.69	46.78	108.35
POOL 14	49.69	59.13	49.07	109.21	302.58	106.84	227.53
POOL 15	52.86	63.37	53.02	116.16	312.26	111.43	241.72
POOL 16	52.27	64.60	54.06	117.01	294.31	106.64	241.11
POOL 17	88.94	107.23	87.79	198.66	549.47	192.82	411.27
POOL 18	101.47	120.96	98.97	225.14	637.51	222.59	467.77
POOL 19	100.54	118.16	98.52	218.72	616.25	217.31	457.84
POOL 20	51.71	69.13	53.74	127.01	313.80	109.85	252.56
POOL 21	42.62	57.50	44.24	105.93	262.23	91.28	209.76
POOL 22	32.04	39.02	32.13	71.76	192.45	68.17	148.22
POOL 23	16.39	21.40	17.16	38.95	94.94	33.87	78.36
POOL 24	30.26	35.27	29.73	65.07	182.71	64.82	136.80
POOL 25	24.22	29.46	24.00	54.55	149.56	52.46	112.53
POOL 26	24.32	29.23	24.81	53.05	137.78	49.92	110.56
POOL 27	72.61	81.06	70.54	145.77	376.94	142.06	314.06
POOL 28	151.88	213.82	177.36	346.46	974.90	333.11	771.65

EXPANDED VISITOR DAYS FOR MORE DISTANT ORIGINS BY POOL BY ACTIVITY BY YEAR
YEAR 4

POOL 1	27.90	20.64	4.89	36.84	245.52	72.94	47.83
POOL 2	28.99	21.91	4.94	38.84	254.79	62.94	48.94
POOL 3	26.93	19.42	4.87	34.94	237.27	84.32	46.97
POOL 4	21.89	12.94	4.83	24.88	194.59	147.55	42.76
POOL 5	127.68	174.39	138.82	330.75	773.39	270.74	566.43
POOL 6	69.14	159.51	117.86	190.80	501.94	118.61	284.67
POOL 7	31.24	41.25	33.58	78.20	188.04	66.18	135.84
POOL 8	37.44	52.18	40.36	99.89	237.28	81.57	169.31
POOL 9	31.46	41.66	33.55	79.39	193.82	67.61	137.56
POOL 10	44.38	57.51	46.38	110.40	281.26	97.29	192.68
POOL 11	38.58	50.97	40.12	98.51	252.28	86.16	178.25
POOL 12	32.75	97.38	61.83	124.37	229.98	56.80	135.11
POOL 13	25.13	36.63	27.42	70.29	162.26	55.19	116.97
POOL 14	57.57	72.95	59.45	140.37	367.00	126.90	247.15
POOL 15	61.37	78.31	64.37	149.51	379.25	132.56	263.01
POOL 16	61.16	80.40	66.16	151.65	359.78	127.76	264.24
POOL 17	103.78	133.90	107.15	257.01	670.56	230.53	449.78
POOL 18	118.22	150.06	120.61	290.93	777.08	265.76	510.90
POOL 19	116.96	146.33	119.85	282.15	750.18	259.10	499.23
POOL 20	59.62	84.90	64.82	162.47	378.57	129.80	273.02
POOL 21	49.17	70.71	53.41	135.68	316.38	107.87	226.97
POOL 22	36.47	47.29	38.28	90.55	228.70	79.40	158.09
POOL 23	18.72	26.80	20.61	49.27	113.23	39.60	83.82
POOL 24	34.80	43.18	35.78	82.97	219.79	76.39	147.47
POOL 25	28.29	36.56	29.29	70.52	182.78	62.80	123.06
POOL 26	29.42	37.43	31.42	70.43	172.89	61.59	124.79
POOL 27	84.78	104.11	91.15	191.71	465.42	170.89	346.84
POOL 28	182.67	270.53	197.81	523.01	1223.64	410.35	863.54

EXPANDED VISITOR DAYS FOR MORE DISTANT ORIGINS BY POOL BY ACTIVITY BY YEAR
YEAR 5

POOL 1	31.43	24.18	5.77	44.52	286.58	89.86	51.28
POOL 2	32.73	25.74	5.81	47.11	298.01	77.51	52.52
POOL 3	30.24	22.64	5.74	42.05	276.08	103.07	50.23
POOL 4	24.87	15.48	5.67	30.58	228.93	169.61	45.87
POOL 5	166.19	200.80	164.59	400.43	919.07	316.43	613.99
POOL 6	78.51	191.59	138.75	231.90	587.24	136.94	305.79
POOL 7	35.31	48.98	39.31	95.54	220.16	76.26	145.28
POOL 8	42.20	61.73	47.13	121.60	276.89	93.71	180.49
POOL 9	35.33	49.04	39.02	96.13	225.10	77.35	145.95
POOL 10	49.86	67.73	53.95	133.78	326.98	111.38	204.56
POOL 11	43.21	59.91	46.54	119.15	292.73	98.40	180.34
POOL 12	36.76	114.28	71.82	150.91	267.95	65.07	143.38
POOL 13	28.41	43.49	32.12	85.90	190.12	63.63	125.13
POOL 14	65.53	87.12	70.07	172.53	432.93	147.33	266.05
POOL 15	70.15	93.90	76.20	184.49	448.95	154.48	284.26
POOL 16	71.07	97.90	79.63	189.97	432.47	151.27	290.09
POOL 17	124.25	162.05	128.63	321.73	804.67	272.31	492.99
POOL 18	137.61	183.29	145.39	365.67	936.92	315.40	562.36
POOL 19	135.71	178.12	144.00	353.45	901.95	306.61	547.76
POOL 20	68.22	102.04	76.85	200.96	448.78	151.44	295.63
POOL 21	57.11	86.46	64.31	170.71	381.01	127.79	249.79
POOL 22	41.88	57.11	45.61	112.47	271.53	92.85	171.84
POOL 23	21.78	31.73	24.73	61.86	136.22	46.93	92.19
POOL 24	41.11	53.51	43.76	105.81	268.97	92.01	164.72
POOL 25	34.00	45.98	36.40	91.30	227.79	77.03	139.69
POOL 26	35.69	47.53	39.50	92.20	216.23	75.97	142.85
POOL 27	97.68	126.23	108.31	242.04	561.20	201.79	381.15
POOL 28	216.12	332.30	241.63	621.05	1496.25	494.76	959.88

TOTAL VISITATION TO CORPS PROJECTS
BY POOL, BY YEAR

TOTAL VISITS (000)

	1980	1985	1990	1995	2000
POOL 1	238.21	305.94	380.69	456.56	533.61
POOL 2	239.91	308.56	384.39	461.36	539.46
POOL 3	238.45	305.64	379.52	454.72	530.05
POOL 4	241.51	306.47	377.33	449.45	521.00
POOL 5	1277.84	1616.25	1991.25	2382.19	2779.69
POOL 6	786.78	993.90	1214.42	1442.53	1670.72
POOL 7	322.38	403.08	487.25	574.34	660.84
POOL 8	407.68	507.69	611.60	718.02	823.75
POOL 9	338.29	418.72	501.36	585.06	667.91
POOL 10	477.76	591.48	710.15	829.91	948.24
POOL 11	427.77	527.97	632.11	736.88	840.28
POOL 12	411.34	517.64	627.46	738.22	850.18
POOL 13	279.82	347.26	419.31	493.90	568.81
POOL 14	596.44	743.94	904.05	1071.38	1241.56
POOL 15	629.20	782.95	950.82	1128.38	1312.43
POOL 16	614.00	764.65	930.00	1111.15	1312.38
POOL 17	1080.04	1347.96	1636.18	1952.01	2302.62
POOL 18	1242.24	1548.28	1874.40	2233.55	2646.63
POOL 19	1214.03	1510.31	1827.33	2173.79	2567.59
POOL 20	658.51	813.30	977.80	1153.19	1343.91
POOL 21	557.02	682.72	813.56	960.19	1137.19
POOL 22	414.18	497.33	583.79	678.78	793.29
POOL 23	213.48	255.72	301.08	351.16	415.44
POOL 24	383.84	459.42	544.65	640.39	769.89
POOL 25	308.38	372.09	446.78	533.30	652.20
POOL 26	279.42	340.65	429.68	528.17	649.97
POOL 27	821.84	1005.91	1207.83	1453.90	1719.00
POOL 28	1981.59	2461.44	3006.17	3671.55	4401.84

END

FILMED

6-83

DTIC